March-April 2010

Fires

A Joint Professional Bulletin for U.S. Field and Air Defense Artillerymen

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Adaptive Fires:
A flexible Fires force now and in the future

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Contents
March-April 2010

Afghanistan: The first six months


Page 11

Photo courtesy of 2nd Battalion, 77th Field Artillery Regiment

The 2nd Battalion, 77th Field Artillery, deployed to Afghanistan and was tasked in the first six months with a dual mission of providing timely and accurate Fires for maneuver units in 4th Infantry Brigade Combat Team, 4th Infantry Division, and securing an area of operations encompassing 1,200 square miles. From the beginning, they learned valuable lessons other units deploying to Afghanistan might find useful.

Mud to Space

Versatile and agile

Expeditionary

Headquarters, Department of the Army • PB644-10-2

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Adaptable Fires:
Making a flexible Fires force for the future

By MG David D. Halverson,
Commanding General of the Fires Center of Excellence

"We must be prepared to decentralize operations to adapt to complex and rapidly changing situations. Yet, organizational or physical decentralization alone may be insufficient to meet the challenges of the future. Leaders throughout our future force must have both the authority as well as the judgment to make decisions and develop the situation through action. Critical thinking by Soldiers and their leaders will be essential to achieve the trust and wisdom implicit in such authority. The training and education of our entire force must aim to develop the mindset and requisite knowledge, skills and abilities required to operate effectively under conditions of uncertainty and complexity."

GEN Martin E. Dempsey
U.S. Army Training and
Doctrine Command Commanding General

No one can predict the future, but it is prudent to have a strategy to stimulate thought and to serve as a guide for the way ahead. In December 2009, the Training and Doctrine Command released DA Pam 525-3-0, *The Army Capstone Concept Operational Adaptability – Operation under Conditions of Uncertainty and Complexity in an Era of Persistent Conflict*. This document describes capabilities and characteristics needed to operate in complex environments across the spectrum of conflicts and missions. More importantly, it provides a foundation on which to build the Army's Leadership Development Strategy and Army Modernization Strategy. Combined these documents outline a method to achieve success in the otherwise unpredictable future.

In doing our part to meet this challenge, the Fires Center of Excellence realized that in order to create leaders, Soldiers and units that represent the force described in the Army Capstone Concept we must adopt an enterprise approach to Fires. We have to look at systems – we have to look not only at "what" we teach, but "how" we teach based on how our Soldiers and leaders learn and is our unit structure right for the mission set. Recent and current conflict has shown us that we must integrate joint and interagency assets to be able to develop a situation through action and adjust rapidly to changing situations to achieve what the ACC describes as "operational adaptability." However, we must have a Fires force that provides the timely fires when we need them. As we begin defining the fires functional concepts, we are asking the subject matter experts to give us a rundown on how they see this working in concert and if we are "on target" with our way ahead. This year's annual Fires Seminar will address "Adaptable Fires for Full Spectrum Operations" and how to continue our professional dialogue on the development of the fires functional concept.

The Army Capstone Concept discusses "operational adaptability" which is made up of several tenets as mentioned above, but how are we going to apply those to our institutions and formations?

Versatile and agile. The ACC describes an uncertain future with an enemy or enemies with any number of aims. Every operation and mission will be different. At daylight, a unit may start a mission that falls on the stability side of the scale, but by noon the mission may have turned into a high-intensity conflict. It may also include Joint Interagency Intergovernmental Multinational capabilities that need to be integrated. Versatility and agility is what wins the day along with the ability to frame those complex problems and create a vision from chaos. To build these characteristics, we must focus on our training strategies and learning models and build force structures to support the fires force.

Expeditionary. Soldiers and units are an inherently expeditionary force, but must also be experienced with their equipment, procedures and TTPs – they must have the proper equipment and structure to be expeditionary and the time to train with that equipment. History has told us that our military will be fighting an "away" game and as the enemies' skills change at a faster and faster pace, we too must retain flexibility and agility like never

"Recent and current conflict has shown us that we must integrate joint and interagency assets to be able to develop a situation through action and adjust rapidly to changing situations to achieve what the ACC describes as 'operational adaptability.'"

"As the Fires Center of Excellence begins work on the fires functional concept, we will continue to engage the Fires force for relevant and professional dialogue on its construct and stay glued to the hip of the Army as these concepts evolve."

before. Remaining focused on an expeditionary mindset is key to fostering a climate where the warrior ethos reigns and our forces remain steadfast in the face of adversity.

Sustainable. Our challenge is to go to school while at war. Balance is an often used term in the Army these days. The need to teach Soldiers and leaders how to think rather than what to think has never been clearer. To defeat adaptive enemies, we must out-think them in order to out-fight them. Technology can enhance human capabilities, but at the end of the day, war remains more art than science, and its successful execution will require battle command more than battle management.

We have learned that fires force training and education should produce imaginative staffs and commanders who understand how to interact with other service's leaders and how to get the most out of the full set of joint and interagency capabilities. In the end, we seek a bench of leaders able to think creatively at every level of war and are able to operate with equal comfort in Army, joint, interagency and multinational environments.

Interoperable. Because our future operational environment will exhibit uncertainty and complexity, our Fires force will have to be undeniably interoperable. Both FA and ADA systems and units must be able to operate effectively together as well as with joint and combined forces. The Fires force must be interoperable at several echelons and be able to "plug and play" into any JIIM environment and immediately be effective.

Lethal and nonlethal. We will continue to expand our fires functions and capabilities. Encompassing lethal and nonlethal effects is just the beginning. We must capitalize on interagency support as well as inter-branch support to include air and missile defense and electronic attack capabilities.

The fires function will continue to identify how to exploit these capabilities to create specific effects on tactical, operational and strategic targets to interdict, degrade, defeat and destroy threat capabilities; and to protect friendly forces, populations and critical infrastructure. These types of offensive and defensive fires are the fires force contributions to joint concepts and doctrine such as Joint Fire Support, Global Missile Defense, Integrated Air and Missile Defense, and Offensive and Defensive Counter Air Operations. Ninety percent of ADA classes are now being held at Fort Sill. It can't get any better than this because this sets us up for unprecedented offensive and defensive capabilities and synergies never seen before.

Adaptable Fires. Hence, the 2010 March-April edition of the *Fires Bulletin* is dedicated to "adaptable fires" and is setting the stage for the 2010 Fires Seminar, May 17-20, held at Fort Sill. During the seminar, we will discuss the way forward with senior TRADOC leaders from both an enterprise approach and specifically the Army Capstone Concept. We will tie those pieces in with current joint commanders and how they see the current fight evolving and what they need and expect from future fires force leaders and then finish the week with a day of branch specific seminars driving home the key points of our strategies and concepts.

As the Fires Center of Excellence begins work on the fires functional concept, we will continue to engage the Fires force for relevant and professional dialogue on its construct and stay glued to the hip of the Army as these concepts evolve. This is the start point for the Fires force and only a collaborative effort from across the Fires force will truly achieve the level of intellect needed to meet the challenges that lay ahead.

The 2010 May-June edition will be dedicated to what we learned during our annual seminar and what each branch discovered during that week. Join us May 17-20 as we will discuss "Adaptable Fires for Full Spectrum Operations." I hope to see you there or if you are unable to make it in person – tune in via Adobe Connect or Defense Connect Online (DCO) to each of the briefings and submit questions for the presenters to answer in real time. Your input and experience is key to successfully building a strong Fires force for our future and ensuring the fires functional concepts meet the need today and for tomorrow.

Fit to Fight – Fires Strong!

2010 Fires Seminar

FIRES
Center of Excellence

"Adaptable Fires for Full Spectrum Operations"

May 17-May 20 at the Fires Center of Excellence, Fort Sill, Oklahoma

Topics of discussion:

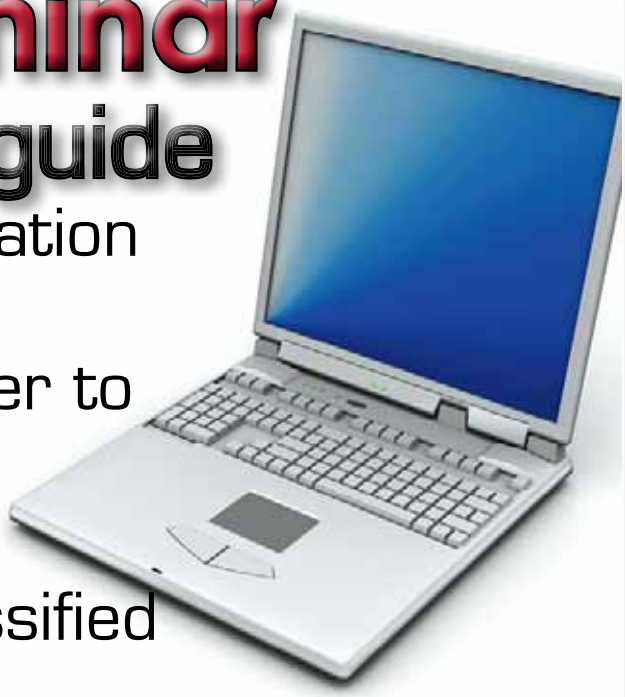
- Army Capstone Concept
- Joint and combined Fires
- ADA theme: "Providing a flexible and adaptive air and missile defense (AMD) force capable of defeating AMD threats across the full spectrum"
- FA theme: "Institutional adaptability and leader development in full spectrum operations"

Visit www.fortsillfires.com after April 1 for registration and lodging information

Email brenda.j.spencer@us.army.mil and michele.flanagan@us.army.mil for trade exposition details

2010 Fires Seminar

Virtual attendance guide



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» All virtual attendees must establish an account with Defense Connect Online (DCO) in order to view seminar briefings in real-time. A short tutorial for users without existing DCO accounts can be found at https://www.us.army.mil/suite/doc/21404059. (Note: Classified briefings require additional registration with both AKO-S and DCO-S.)

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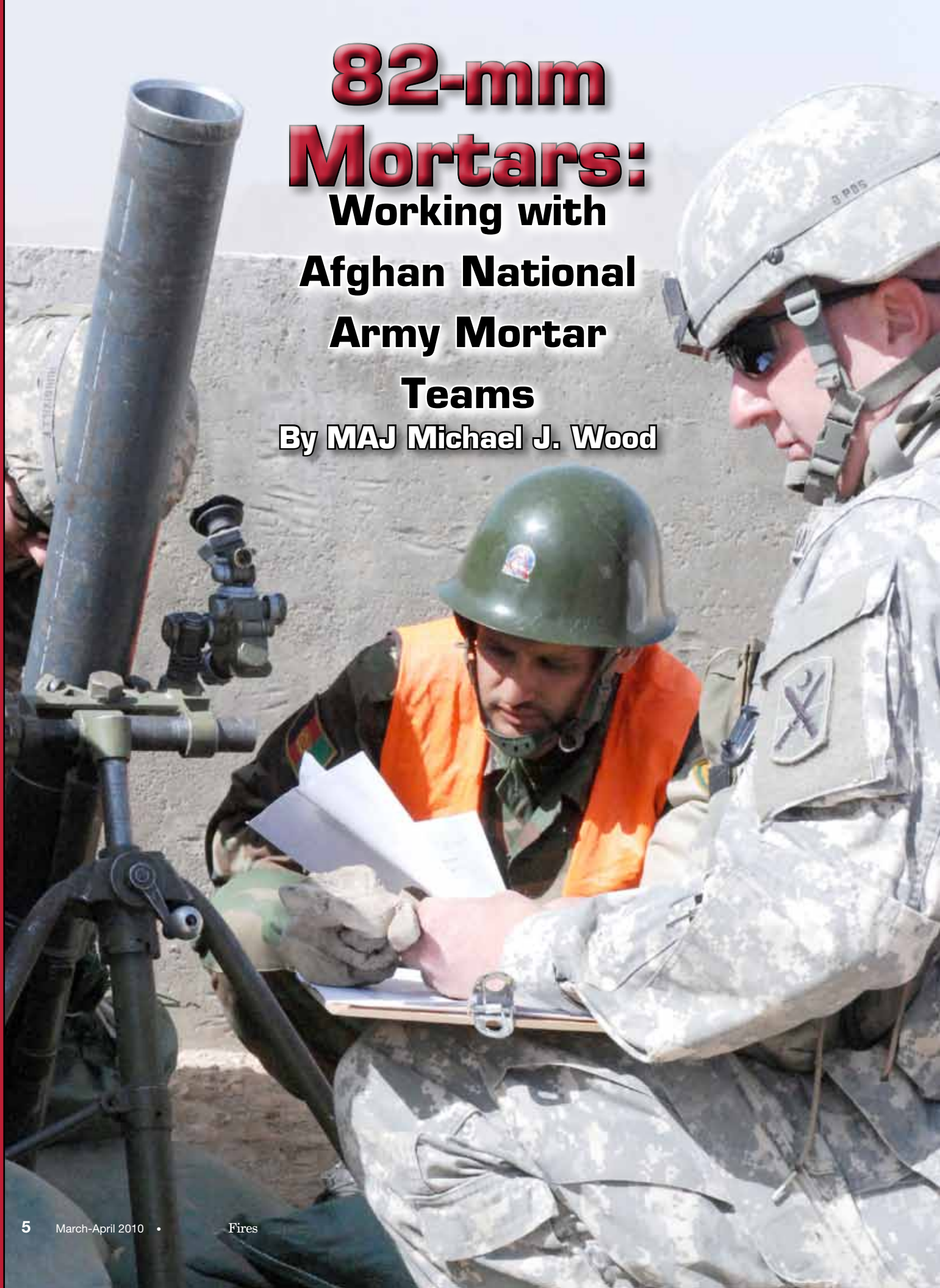
» For additional information, contact John Dorsey, Fires Center of Excellence Certified Knowledge Management Advisor, at dorseyj@conus.army.mil or 580-442-3889.

82-mm Mortars:

Working with Afghan National Army Mortar Teams

By MAJ Michael J. Wood



During the past two years, many Afghan National Army formations began taking the lead on executing missions with International Security Assistance Forces in Afghanistan. Even though the ANA is still dependent on coalition support for Fires, air support and medical evacuation, the ANA is capable of putting far more soldiers into an area during an operation than any International Security Assistance Force formation in Afghanistan. ANA soldiers are beginning to occupy combat outposts in platoon- and company-sized formations without International Security Assistance Force or other coalition forces.

Inevitably, these formations will bring some or all of their organic 82-mm mortars. Unfortunately, not all ANA elements are proficient in the use of their mortars. In addition, many International Security Assistance Force forces, being Western armies, do not fully understand the capabilities and limitations or the gunnery aspects of these very important Soviet-designed ANA company-level fire support weapons. The importance of mortars to a company commander cannot be underestimated — and the ANA is no exception. However, with training and preparation, the ANA can increase the effective use of its mortars and can rely more on their own fire support and, hopefully, less on International Security Assistance Force fire support assets.

This article lays out some of the specific issues the ANA faces in the use of its mortar systems, focusing specifically on its 82-mm mortar. This article, in particular, addresses various equipment and ammunition issues, gunnery issues and important safety considerations that must be taken into account when working with the 82-mm mortar. Next, specific examples of how the ANA overcame some of these problems at the Spera Combat Outpost in eastern Afghanistan. Finally, some training techniques and recommendations are laid out to aid personnel to help the ANA improve its mortar gunnery. This article isn't a comprehensive guide to ANA 82-mm mortar gunnery. My intent is only to give future ANA advisors and International Security Assistance Force fire support personnel insight into helping the ANA use its company-level 82-mm mortars.

Description. The ANA uses Soviet-designed 82-mm mortars. Though the mortar is similar in capabilities to the U.S. 81-mm mortar, the actual weapon system has some significant differences. The A-frame supporting the mortar is not as stable as the U.S. 81-mm mortar. The base plate also is different. Unlike the U.S. 81-mm mortar, the 82-mm mortar base plate does not lay flat on the ground and set itself after one round. Rather, it is angled slightly and weighted with sandbags. This seemingly minor difference can cause significant delays in firing when the mortar has to make a large azimuth shift during fire missions.

Another difference is the high-explosive range data plate on the mortar itself. This plate actually contains the elevation settings required for a given charge and range (in 100 meter increments). Essentially, it is a very limited high-explosive range tabular firing table data. If this plate is not present, unless the gun crew has the data written down and with them, then the crew has no way to determine proper elevation and charge data for high-explosive based on the target range.

Finally, the 82-mm gun sight is azimuth based and uses the 6,000 mil system. Because it does not use any type of common deflection and it cannot be "floated," the gun must be laid at a known azimuth. The lack of a "floating" sight or common deflection causes certain azimuths to be blocked because the tube will be in the way of the sight. Because the ANA has no firing computers or comprehensive tabular firing tables, it is strongly recommended that the gun be laid at zero mils. To lay the gun on any other azimuth adds additional calculations into the firing data computations that are completely unnecessary and could slow down fire mission processing.

A final complication to the ANA use of the gun sight involves the nature of the Dari or Pashtun written languages. The ANA read from right to left while the mortar azimuth and elevation setting numbers are supposed to be read left to right. When working with the ANA mortar team, it is absolutely critical to verify its gun sight data until it is clear the team knows how to read the gun sight correctly.

Fire direction and gunnery. The ANA fire direction is quite primitive. Most ANA mortar chiefs simply lay the gun on azimuth with the target they want to engage (therefore, the mortar team must be able to see the target), estimate the range, consult the range plate on their tubes, set the range data, cut the charge on the ammunition and fire. Often a platoon leader or the company commander is there to verify the data and make corrections. Aiming poles are not used and range corrections, particularly in mountainous terrain, are either too timid or too bold. ANA fire direction does not address vertical interval corrections. The simple data plate assumes the target and gun are both at sea level — a difficult assumption to make in Afghanistan.

There are many reasons for the primitive fire direction and gunnery techniques. First of all, many ANA mortar men have not been trained in or do not understand the principles of indirect lay using an aim point (like aiming poles). Further, even fewer of their officers understand these principles. Given the old Soviet model that many of their officers know and practice, even if the mortar team understands and is willing to aim the tube off of aiming stakes, if the officer does not understand the technique, he will not allow the mortar team to do it.

Secondly, many of the ANA mortars have either missing or broken sights. The ANA also has no way to purge its sights (no nitrogen purging kits). Without an operational sight, direct lay on the target is the only technique the ANA mortar team can use. Finally, there is no tabular firing table or firing computers for the ANA to use with their mortars. This lack of tabular firing table or firing computer is the principle reason why the ANA mortar team cannot adjust for vertical interval. Another important side effect of no tabular firing table is the ANA has no way of giving a maximum ordinate of its mortar rounds. Given the high angle nature of mortars, simply assuming that the maximum ordinate is the same as an 81-mm mortar is not a good assumption.

Ammunition. Ammunition generally comes in three types: Russian/Soviet high-explosive, Chinese high-explosive, and U.S. 82-mm illumination. The first two types of ammunition do not have the same ballistic performance. As a general rule, the Chinese manufactured ammunition does not perform as well as the Russian ammunition and can fall short by as much as 50 to 100 meters when fired with the same data as the Russian ammunition. The Chinese ammunition also is more prone to hang fires. However, both rounds share a common, dangerous aspect — neither round has a minimum range "spin safety" (that is, a minimum number of times the round must spin when leaving the tube before the fuse is armed). Once the safety pin is removed from the fused mortar round, the round is armed. Other than that, the rounds are like U.S. ammunition. They may have "donut" or "cheese" charges, and these charges are "cut" just like U.S. mortar ammunition. The U.S. designed illumination does have a minimum range "spin safety"

1SG Terry Branham (right) and SPC Seth A. Hungiville (left) inspect an 82-mm mortar set-up with an Afghan National Army weapons instructor at Kabul Military Training Center, Sept. 5, 2007. (Photo by SSgt Luis P. Valdespino Jr., U.S. Marine Corps)

An Afghan National Army mortar team takes a break from training, but still maintains their position next to their mortar. (Photo by MAJ Michael J. Wood, U.S. Army)

and is much safer to handle.

When working with ANA mortar ammunition, the mortar team must take care with fused rounds. The ANA is generally aware of the dangers associated with their high-explosive rounds and does not pull the safety pin until just before they drop the round in the tube. The mortar teams are quite frugal and save their "cut" charges (U.S. mortar teams do the same). They do this because it is not uncommon for the ANA to use mortar rounds recovered from enemy caches. Often times, the rounds recovered from enemy caches do not have all (or any) of the charges with the round. To fire these rounds, the ANA will use its "saved" charges. Sometimes, these charges have been exposed to the elements or are quite old.

Observed fire. Without tabular firing tables, plotting boards or firing computers, the ANA really does not possess the capability to call for and adjust mortar fire — unless the observer is on the gun target line. Compounding this is a lack of skilled observers within the ANA. While teaching the ANA how to call for and adjust fire was not impossible, it was very difficult. But it can be done, and the fact that the 82-mm mortar is azimuth laid (as opposed to common deflection) actually makes it easier for the ANA to gain this capability. If the observer can give the ANA mortar team a target grid, the ANA can (theoretically) compute the azimuth and the range off of a map and fire on the target. Using the observer to target line factor and the mil range relationship, the guns could adjust (and this is the key reason why it is best if the mortar tubes are laid at zero mils). But the U.S. Soldier must be careful and never forget that the ANA utilizes a 6000 mil compass and gun sight.

Safety considerations. Several significant safety considerations already have been discussed — the lack of a minimum range "spin safety" on the Soviet and Chinese rounds; the fact that Chinese rounds usually fall shorter than the Russian rounds; the ANA propensity to use found or captured cache ammunition; and the lack of good fire direction tabular firing tables or firing computers to compute observer corrections, gun and target altitude data, gun and target vertical interval, or ammunition maximum ordinate. One last significant safety consideration is ANA hang fire/misfire procedures. The high-explosive rounds the ANA uses are often quite old, and the round may not fire. Compounding this issue is the fact the high-explosive rounds are fully armed when dropped in the tube. If the tube must be cleared manually, then it is critically important that it is tipped slowly and gently to allow the round to slide slowly out of the tube. The ANA soldiers I worked with understood this, but it is important the U.S. Soldiers working with the ANA understand this as well.

Challenges. The challenges the ANA mortar teams and their U.S. advisers face are difficult. Some of them can be overcome, and some cannot. The ANA, itself, has to overcome some issues, such as old ammunition, missing or damaged mortar gun sights and the lack of tabular firing tables and firing computers. But, with training, other issues can be addressed. It is possible to teach the ANA how to fire from aiming posts. It also is possible to improve the fire direction center capabilities and teach ANA mortarmen how to adjust for vertical interval errors, create known points and adjust fire for an observer.

I was part of a team of 10 U.S. embedded training teams assigned to support the approximately 100 ANA soldiers from 3/1/203rd ANA at Spera Combat Outpost in eastern Afghanistan. What follows are the techniques I used with an ANA company from 3/1/203rd ANA. The ANA company had a good mortar team, but the team was only familiar with direct lay. The ANA company commander knew that I was an artillery officer and gave his consent for me to work with his mortar section. The two ANA 82-mm mortars were the only indirect fire assets on the combat outpost.

The first challenge was convincing the leadership and the mortar team that mortars could be fired accurately using aiming stakes. Because the ANA was assuming the combat outpost from a U.S. unit that had a mortar team equipped with a 60-mm and 81-mm mortar, this task was a little easier than we expected. The U.S. mortar team demonstrated (using its own mortar systems) how the concept of laying the tube worked. It then demonstrated emplacement of aiming stakes. After working through this, the ANA mortar team chief and company commander were allowed to aim and fire the U.S. mortar using U.S. calculated fire direction center data. After the ANA understood the U.S. method, we moved to the ANA mortar and began training the mortar team.

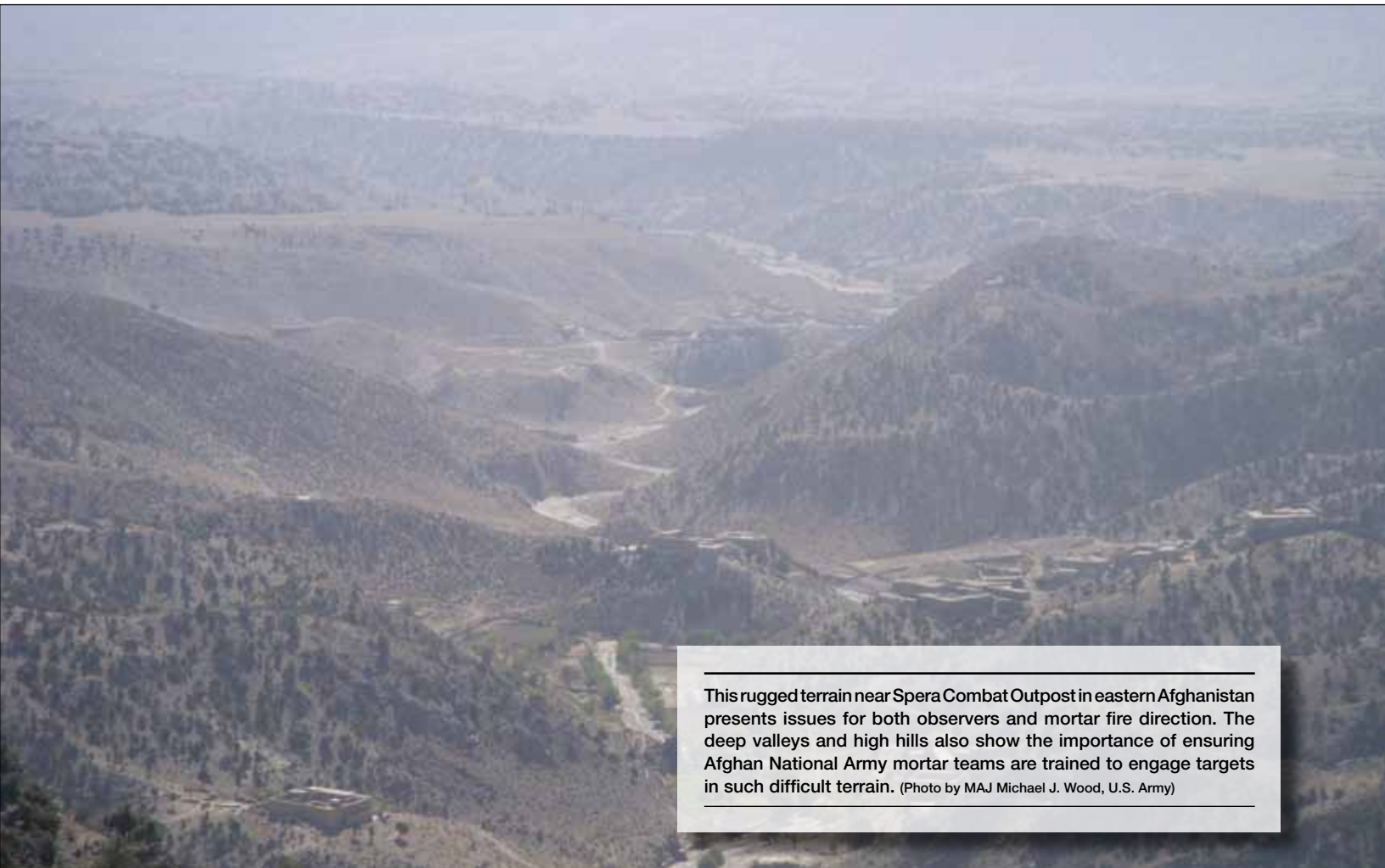
We helped the ANA establish a mortar firing position with Global Positioning System grid coordinates. We then used a declinated M2 compass and determined a zero mil azimuth. After determining this azimuth, the ANA team was trained to emplace the aiming stakes. Over a couple days, we did this several times until the ANA was comfortable with emplacing the aiming stakes on its own.

After teaching the ANA mortar team how to establish position with the Global Positioning System and directional control with a compass, we worked on establishing known points. With our help, the ANA adjusted on known points to the north, south and east of its firing position. The ANA company commander and mortar team chief recorded all of the firing data. The company commander then conducted drills with his mortar team whereby he would call off a specific target and have the team practice using the gun sight and aiming poles for laying the tube. After several of these dry fire drills, he would transition to firing live ammunition on the targets.

Despite the lack of meteorological data (though a U.S. field artillery unit confirmed that the weather remained "generally consistent" during this training) and the age of the ammunition, all of the fires would impact within about 50 meters of the known target grid (as verified with a calibrated set of Viper range finders). This training continued for about four days until the U.S. mortar team departed. After the mortar team left, the ANA became completely responsible for the defense of Spera Combat Outpost. As such, its mortars and the mortar team training took on increased importance.

At this point, it is hard to underestimate the effect of the training with the U.S. mortar team. In the case of this particular ANA mortar team, they had never fired using aiming poles nor had they ever established known points using anything other than direct lay. The U.S. mortar team also treated them as soldiers — a key point to observe when working with the ANA. The ANA respects U.S. Army capabilities and often ANA soldiers will try to emulate U.S. Soldiers. Of equal importance was the leadership of the ANA company commander. The commander was concerned about the training of his mortar team and was willing to get the ammunition necessary for the team training.

After the International Security Assistance Force left Spera Combat Outpost, the ANA commander wanted to adjust illumination on two areas that insurgent forces historically had used to engage soldiers on the Spera Combat Outpost Observation Post as well as a point on a trail they most likely had used to get to the two areas. The issue we had to overcome was there were no skilled observers



This rugged terrain near Spera Combat Outpost in eastern Afghanistan presents issues for both observers and mortar fire direction. The deep valleys and high hills also show the importance of ensuring Afghan National Army mortar teams are trained to engage targets in such difficult terrain. (Photo by MAJ Michael J. Wood, U.S. Army)

in the ANA on the observation post. Working with the commander and a map of the area, we began adjusting illumination**.** Due to the proximity of the international border, we deliberately fired the first round short of the target. The ANA NCO on the observation post then indicated which direction (left, right, closer or further) relative to his position he needed the round to go.

The commander and I worked the corrections (through an interpreter) on the map. As each correction was plotted, we calculated a new azimuth and range. The mortar chief then adjusted his tube to the new data and another adjustment round was fired. Because the ANA has no tabular firing tables, the real problem we had with this method was adjusting the time fuse setting correctly. Because the vertical interval was in excess of 300 meters, we had to slowly adjust "upward" and then "outward" on the gun target line until the illumination was optimal.

After adjusting the illumination, it became apparent we needed a method for calculating corrections due to vertical interval. Realizing the ANA was not trained in ballistics, I tried to resolve the issue and come up with an acceptable approximation. Since mortars are high angle, the last several hundred meters of the descending trajectory can be closely approximated as a straight line. Making this assumption, I then began to analyze the "should hit" and "did hit" range data from the three known high-explosive points. I compared that range data with the Viper measured data and map spotted altitudes.

Because I was assuming the last few hundred meters of descending trajectory was a line, I took data from the north and south known point and used the algebraic equation for a linear slope (y=mx + b) to try to compute an approximate vertical interval correction factor – (y is the vertical interval, x is the horizontal interval, m is the slope, and b is the vertical offset). I ended up with a correction factor that was equal to the "did hit" range correction divided by the vertical interval. After computing the correction factor, I took the "should hit" data from the east known point and after multiplying the correction factor (obtained with the north and south target data) by the vertical interval and then adding it to the "should hit" data, I compared the results to the "did hit" range data. In mathematical form, the approximation is expressed as: (Target Range) + [(Correction Factor) X (Vertical Interval)] = Adjusted Range.

"Working with and training the ANA is an important part to the counterinsurgency fight in Afghanistan."

The calculated data agreed within 30 meters of the "did hit" data of the east known point despite there being a vertical interval of more than 300 meters and a range of about 2,000 meters. (It also assumes the vertical interval is positive — if the vertical interval is negative, then correction is subtracted.) A point of caution is in order — this correction was calculated for a very specific point in Afghanistan with known firing data and at a gun altitude of more than 7,000 feet. Do not assume all firing data will yield the same results. The linear approximation used is a good one, but only for high angle fire on mortars. It is significantly less accurate for low-angle cannons. This point was made very clearly to the ANA commander. To re-emphasize, this was done in a remote combat outpost under combat conditions and gave the ANA a capability to engage threats with its only indirect fire asset. And it was used only after several verification fire missions demonstrated its validity as an approximation.

After working through this, the ANA commander and the mortar team decided to try to verify my approximation calculations. After firing more than five different targets in different directions with high explosive and two more with illumination, we found the correction factor was always range accurate to within 60 meters (as measured by a Viper). This was a marked contrast to the 200, 300 and 400 meter range corrections we sometimes had to make due to the ruggedness of the terrain and huge differences in vertical interval.

Where it really paid dividends was in illumination missions by quickly giving the ANA an adjusted range for time fuse settings. Having a fairly high degree of confidence in the vertical interval adjustment calculation, the ANA began to apply the correction consistently in their firing during the next two to three weeks. An added benefit to this validation was the ANA mortar chief began to express a real interest in understanding the concepts of ballistic trajectories. In the process, he began to understand his weapons system's capabilities and limitations.

The final challenge in dealing with ANA mortar teams is not with the team itself, but with observers. The ANA simply does not have many observers with even rudimentary skills. Often, only the commander has any skills in adjusting fire. This is because many ANA soldiers cannot read anything, much less a map. Therefore, target location is sketchy at best and any corrections are "eye-balled" by ANA soldiers. There are some soldiers who can read a map, but often they read using the Russian method, hence the easting and northing are "reversed" from the NATO method. U.S. Soldiers must always verify a target grid given by the ANA if the ANA are calling in targets to any U.S. system.

Due to the operational circumstances at the Spera Combat Outpost, it was not possible to work one-on-one with the ANA observers on the observation post. In addition, the ANA mortar team has to gain the ability to use a mortar plotting board or, at the minimum, the ability to plot corrections on a map to re-compute data due to the new map spot. We did just that at the Spera Combat Outpost. I worked directly with the commander to show him how to take adjustments and re-compute range and azimuths for the mortars based off of corrections, and even though it was a slow process, the commander learned the process and quickly got better at it.

Recommendations. Working with and training the ANA is an important part to the counterinsurgency fight in Afghanistan. The ANA has several capabilities, but also has several limitations. Understanding the limitations and capabilities of company-level mortars is important in any military that uses mortars. As more and more U.S. Soldiers come in contact with the ANA, it is important they become aware of what the ANA can and cannot do. As fire supporters, we must understand ANA infantry mortars just like we understand friendly mortars. I offer several recommendations to personnel who might find themselves working with ANA mortar teams.

Get to know the mortar team members, the condition of their equipment and their company commander. The ANA mortar team is willing to work with U.S. Soldiers, but only if the commander approves.

If possible, try to get a U.S. mortar sergeant to work with the ANA team. The ANA mortar teams that I worked with greatly respected U.S. mortar sergeants. A joint ANA and U.S. mortar live fire with mixed crews can pay huge dividends by motivating the ANA to want to learn more. Make sure that if this is done, the ANA

company commander is invited. Earn his respect, and he practically will beg U.S. Soldiers to train his mortar teams.

Understand the ANA mortar team members. Some of them will be very good , and some of them will not understand much of anything. Let them demonstrate their capabilities before you attempt to train with them.

Understand manual fire direction and mortar ballistics. There are no computers or tabular firing tables with the ANA mortar teams (at least I never saw one). Many times, ANA mortars will engage targets they can see or, if they are very good, targets they can compute data from off of a map.

Realize that an 82-mm mortar is not an 81-mm mortar. They may be used in the same type of role, but they are no more similar than an M4 carbine and an AK-74 assault rifle. Both mortars have a tube, a base plate, "legs," a gun sight and ammunition — and that is about the extent of their similarities.

Finding ANA soldiers who have the capability and willingness to learn how to call for and adjust fire will be extremely difficult. If you do find a willing soldier (or, more likely, officer) who has the capability to learn, than do everything you can to develop that capability.

When training with the ANA mortar teams, always try to use the same interpreter. Gunnery of any kind is full of jargon, and it is critical you ensure your interpreter understands the various gunnery terms like deflection, azimuth and lay before you try to work with the ANA. Your interpreter must understand the gunnery if he is going to interpret for you. Remember, many of these ANA mortar sergeants really do want to understand their weapons system.

Drink tea with the ANA mortar team if they invite you. You will be glad that you did. You will never get to know the ANA mortar teams until you are willing to drink tea with them.

Of course, these are only recommendations based upon my experience as an embedded training team Soldier with the ANA. As many commercials say, your individual experiences may vary, but I will say that some of my best moments in Afghanistan occurred during my work with the ANA mortars at the Spera Combat Outpost. Just like us, nothing gets them more excited than a first round hit — and with assistance, training and understanding, ANA mortar teams can do this more often than they can now.

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SPC Seth A. Hungiville (center right) inspects an 82-mm mortar set-up with an Afghan National Army weapons instructor at Kabul Military Training Center, Sept. 5, 2007. (Photo by SSgt Luis P. Valdespino Jr., U.S. Marine Corps)

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(Left to right) 1LT Great, CPT Carpenter and SSG McClintock, all of 2nd Battalion, 77th Field Artillery Regiment, identify potential enemy fighting positions during a maneuver patrol in Afghanistan. (Photo courtesy of 2nd Battalion, 77th Field Artillery Regiment)

Afghanistan: The first six months

By LTC Michael J. Forsyth, MAJ George L. Hammar and MAJ Billy D. Siekman

The 2nd Battalion, 77th Field Artillery, deployed to Afghanistan and was tasked in the first six months with a dual mission of providing timely and accurate fires for maneuver units in 4th Infantry Brigade Combat Team, 4th Infantry Division, and securing an area of operations encompassing 1,200 square miles. From the beginning, we learned valuable lessons other units deploying to Afghanistan might find useful. Such lessons include application of fires in mountainous terrain, the indirect approach to maneuver operations, the criticality of field artillery operations and balancing maneuver missions with the fire support role, and we've learned the fact that fire support in Afghanistan requires skills beyond basic forward observer tasks. This article discusses lessons learned and offers solutions to issues we discovered. We organized the article into two sections, discussing the dual mission — owning an area of operations in Afghanistan and fires in counter-insurgency operations.

Owning an area of operations in Afghanistan. Because our brigade combat team was spread across an area of eastern Afghanistan covering more than 10,000 square miles, it was incumbent upon the brigade combat team to assign the battalion's headquarters an area of operations. Area of Operations Steel encompassed more than 1,200 square miles and four districts of two separate provinces in Afghanistan. This challenge was even more daunting when considering the assets available to secure such a large area with imposing mountainous terrain. With a maneuver platoon raised in house and other attached enablers, 2-77 Field Artillery implemented operations designed to secure the area enabling governance and developing building capacity successfully. In securing the area, we applied an indirect approach to facilitate success.

For 2-77 Field Artillery, it is the process of using many different assets, most of which were nonlethal, to produce effective security in our area. Upon arrival in Afghanistan, our unit came under attack on several occasions within the first 10 days of transition of authority. We had a decision to make at that point — whether or not to go out the gate hard with lethal operations or to take a softer approach using information operations, civil-military operations, engagement and relationship building with locals to enable security. The paucity of resources helped drive the decision toward the latter because a significant loss in manpower effectively nullified lethal operations. As it turns out, our focus on nonlethal operations, complemented by patrolling and presence in the area of operations, drove down the number of attacks several fold in the weeks following the first 10 days.

Lessons in maneuver operations. Before our deployment, the maneuver mission pressed the battalion to develop a cohesive platoon capable of dominating terrain to prevent insurgents from controlling the population in partnership with Afghan forces. This maneuver platoon consists of about 36 Soldiers from across the battalion from multiple military occupational specialties.

During the training for Afghanistan, the maneuver platoon rehearsed battle drills as a complete platoon. During the deployment however, mission requirements forced the battery commander to maintain an observation post at all times as well as maintain a maneuver element. This effectively reduced the platoon's ability to maintain a dismounted element larger than a fire team because it could never roll with more than two-thirds of the platoon. The lack of manpower reduced the platoon's ability to close with and destroy the enemy. This forced the platoon to adapt their battle drills to coordinate all systems bringing maximum fire power to the fight. Furthermore this allowed the platoon to remain mounted and dominate the enemy from the vehicles until additional brigade assets, such as close combat attack or close air support, are available to enhance the capabilities of the small element.

The early activities in our area of operations and limited manpower forced the battalion into an indirect approach of conducting operations. The battalion plans for the maneuver-platoon Soldiers to execute operations that combine nonlethal elements, while remaining prepared for lethal situations. This enabled us to maintain combat power for the long haul while also winning over the population so that we can implement programs to develop infrastructure, governance, and the Afghan National Security Force. These new tactics also allowed the battalion to achieve the objectives of securing the population and gaining support for the local government.

Implementing the maneuver platoon and key leader engagements by the battalion leadership was instrumental in exerting pressure on the enemy by leveraging the people's will. These methods forced the population to choose between the security and development we provided or the violence and poverty the Taliban provided. Our end state is to change the enemy's standing operating procedures, forcing him to take action that is detrimental to his objectives, thus informing the populace of the Taliban's true intentions.

Obviously, our training prepared the platoon for lethal combat operations. However, our staff and Soldiers realized victory does not come through destruction of the enemy or by dominating the terrain in counter-insurgency operations. Rather, success is quantified in the way you dominate the *human terrain*. This realization allowed the staff to develop courses of action for the maneuver element that focused on support of the local population and government. This

(Left to right) SFC Kyle Riley and 1LT Anthony Great of Headquarters and Headquarters Battery Manuever Platoon, 2-77 Field Artillery Regiment, conduct a patrol in northern Laghman province, Afghanistan. (Photo courtesy of 2nd Battalion, 77th Field Artillery Regiment)

approach was instrumental for us to achieve our objective without continuous lethal engagements with the Taliban during an extended deployment.

Partnership. The Afghanistan National Army artillery battery had many similarities to coalition artillery units in the current operational environment. It was the only ANA unit assigned to western Nuristan with a dual mission of direct support artillery and security operations. Therefore, it had to develop a dual systematic approach to establishing a security presence in western Nuristan while honing artillery skills to provide timely and accurate artillery fires in support of Afghanistan National Security Force.

The assessment of the U.S. Marine Corps embedded training team and our leadership, upon arrival at Forward Operating Base Kalagush, was the artillery battery was incapable of providing artillery fires or comprehending its role as the Afghanistan National Security Force element responsible for security in western Nuristan. Its artillery skills were rudimentary with only an ability to conduct direct fire missions and basic crew drills. Specifically, the fire direction center could not process a fire mission in a timely manner; the forward observers had no understanding of map reading, spotting elevation or conducting target refinement; and only a handful of cannon crewmen could lay the howitzer. Furthermore, only the first sergeant understood tactics well enough to close with and defeat the enemy.

As artillerymen, it was a sobering realization that our focus in western Nuristan must include partnering with the ANA artillery battery to increase its competency in the five requirements for accurate predicted fire. First and foremost, we had to develop a D30 certification program to ensure the unit was capable of providing acurate and timely artillery fires in support of Afghanistan National Security Force and, ultimately, fires in support of any coalition forces as required. This certification program used *Field Manual 3-09.8 Field Artillery Gunnery* as a guideline.

The ultimate objective of the certification program was to train the ANA artillery sections at Forward Operating Base Kalagush in a deliberate, thorough process, culminating in a section live fire in a six-to-eight week period. During the training period, our fire direction center trained and certified the ANA fire direction center in the manual computation of firing data and the digital computation of firing data using the ANA artillery computer system. Our firing platoon similarly trained and certified the platoon leadership in all tasks from occupation to effective crew drill procedures. This was a daunting task and was only achievable through the sheer determination of our trainers and the eagerness to learn by the ANA leaders and soldiers as they modified years of traditional practices to improve their efficiency.

The ANA's practices and doctrine tended to over-centralize tasks with the leaders personally, doing jobs subordinates perform in our Army. Therefore, the battery commander, the lieutenants and the first sergeant acted as the observers, the fire direction center and the section chief for the howitzer. This practice, naturally, did not facilitate training the entire battery on proper crew drill procedures or individual soldier responsibility. The ANA leadership's lack of trust in subordinates derailed the training program and extended the section certification from eight weeks to 14 weeks.

However, after a change in leadership and a refinement of duties and responsibilities, the ANA artillery battery in Western Nuristan was now capable of providing timely and accurate artillery fires in support of the Afghanistan National Security Force. The

A M198 firing point in Area of Operations Mountain Warrior, Afghanistan.
(Photo courtesy of A Battery, 2nd Battalion, 77 Field Artillery Regiment)

"However, the true measure of success for our Fires in counter-insurgency is not how much indirect fire was used, but how much the use of Fires was reduced over time. Therefore, much of our effort in coordinating fire support across the brigade area of operations focused on doing things to reduce expenditures."

leaders understood accurate artillery fires would defeat the enemy and reduce collateral damage and injury to civilians, and ultimately increase support from the local population for its security force. This is an important realization as coalition forces and Afghanistan National Security Force attempted to build credibility with the local government and the population.

Once the sections were certified, they maintained operational capability 24 hours a day. We had to rely on our brothers in arms on 13 to 14 November 2009. On these days, our mortar and gun sections were supporting our observation post during a fire fight with the Taliban. The ANA artillery section was prepared and ready to provide timely and accurate fires in support of a fire fight to retain control of Forward Operating Base Kalagush and the Observation Post Loyalty. On this occasion, the embedded training team observed a mortar team emplacing and guided the ANA observer on the target. The observer conducted a map spot of the grid location and relayed the call for fire to the fire direction center. The fire direction center computed the data manually, requested airspace clearance and sent the information to the howitzers. The howitzers were laid on target and received clearance to fire and achieved effects on target with the first round. This achievement represented the best validation of the training model we implemented with the ANA artillery battery in Area of Operations Steel.

Fires in counter-insurgency. The nature of the insurgency in Afghanistan proved more conducive to the use of indirect fires than in Iraq because the insurgency tended to base itself in rural areas in the mountains rather than in urban areas. That said, much metal is thrown around in Afghanistan. However, the true measure of success for our fires in counter-insurgency is not how much indirect fire was used, but how much the use of fires was reduced over time. Therefore, much of our effort in coordinating fire support across the brigade area of operations focused on doing things to reduce expenditures. Among the initiatives we implemented were fielding the Meteorological Measuring Set-Profiler AN/TMQ-52 meteorological station, which conducted fire support team certification to reduce target location error, developing an escalation of force matrix for artillery fires and using an attack guidance matrix.

Fire support in restrictive terrain. During predeployment training at home station and the Joint Readiness Training Center, Fort Polk, La., we placed emphasis on the ability to achieve first round effects on the target. The forward observer's ability to locate the target accurately was the critical requirement in the restrictive and dominating terrain of Afghanistan. The majority of the main supply routes were dominated by higher elevation terrain, and the enemy typically initiated attacks from above our patrols on this terrain. Therefore, the forward observer had to mitigate target location and elevation errors to achieve first round effects on target.

We were fortunate to initiate our training at our home station, Fort Carson, Colo. The terrain in the training areas has similarities to Afghanistan's terrain. However, home station training practices tend to rely on fixed observer locations or known target locations on which observers have refined their skills during many observer training events. To negate the familiarity of terrain for the observers, it is imperative to force the observers to conduct moving shoots to acclimate the observers to conducting call for fires while on dismounted or mounted patrols. The majority of fire missions executed in Afghanistan came from either dismounted or mounted patrols.

Executing this deliberate training plan at home station forced the observer to update his observer location constantly, forcing the fire direction center to battle track constantly and remove the bad habits of garrison operations. Polar missions are the preferred method to call for fire by our observers. To ensure accuracy, battle tracking is vital, but we required a modification to the pertinent information in the call for fire. The observer had to include target elevation with the standard requirements for the polar fire mission. This allowed the fire direction center an independent check of target elevation and helped account for vertical interval.

Fire support in Afghanistan and the counter-insurgency

An explosion from two 500 pound bombs dropped on insurgents attacking Observation Post Loyalty, Nov. 14, 2009. (Photo by 2nd Lt. Natassia Cherne, U.S. Air Force)

environment required graduate-level expertise. Direct and indirect fires, used in combination, were essential to providing maximum fire power to the maneuver forces on the ground. Fire support could not be an afterthought of the maneuver commander or the forward observer. When direct and indirect fires were employed together in Afghanistan, it proved, time and again, the decisive element for defeating the enemy. The key to success was sound planning of fires before every patrol and rapid employment of those fires when engaged.

Field artillery operations. In our role as the direct support field artillery battalion for the brigade, we were tasked to oversee the standards of discipline and precision of the gunnery solution. This meant maintaining 24-hours-a-day, seven-days-a-week support to our maneuver elements across the brigade area of operations. Management of ammunition resupply and the five elements of accurate predicted fire required the staff's daily oversight. As the fight ebbed and flowed, the logistic staff had to monitor ammunition expenditures accurately to ensure we maintained adequate stock at all locations. Further, fires in the counter-insurgency fight required accuracy to reduce civilian casualties and help manage ammunition expenditures while also ensuring fires had the element of surprise. This casted the battalion fire direction officer back in his traditional role of monitoring expenditure rates while also overseeing the maintenance of the five elements of accurate predicted fire.

Ammunition resupply in Afghanistan required close management. The remote locations of our firebases and forward operating bases made ammunition resupply problematic and the battery commanders had to manage expenditures and resupply requests down to the minute detail.

During the deployment to Operation Enduring Freedom, Task Force Steel had to resupply nine different firebases comprised of three different howitzers (M777A1, M119A2 and M198) and one 120-mm mortar. These firebases were located throughout the brigade's footprint. Resupply was difficult due to the nature of the terrain and the ebb and flow of combat, requiring flexibility throughout the formation

Our administrative logistic operation center was collocated with the brigade support battalion and brigade ammunition transfer point, facilitating several things. First, it was the central hub for all supplies and facilitates receipt and onward movement to the firebases. Second, our administrative logistic operation center had two Military Occupational Specialty 13B Cannon Crewmember staff sergeants attached, and they ensured that artillery ammunition was configured correctly for proper shell-fuze combinations and propellant lots before pushing out to the firebases. Field artillery battalions no longer had a service battery and, thus, did not have artillerymen in the logistic companies (forward support companies).

The decision to attach two 13B NCOs proved critical, because it ensured ammo configurations and saved the firing batteries time by not calibrating different lots delivered by every combat logistics patrol. Due to the large number of propellant lots on-hand, we determined that a key task was lot management at the ammunition transfer point. Our 13Bs at the ammunition transfer point facilitate the shipment of single lots of ammo to reduce the need for constant calibration or the stockpiling of "trash" lots at firebases that tend to go unused. This eased a great burden from the batteries in ammunition management.

There were several times during the deployment that the ammunition transfer point went critically short during our combat operations. One instance was during the fighting at Combat Outpost Keating on 3 October 2009. During that fight, one firebase nearly ran out of M232 propellant and rocket assisted projectile rounds within two hours of the initial call for fire. The ammunition transfer point had a small number of M232 on hand and a small number of RAP rounds. Our immediate action drill was to cross-level ammunition from our firebases experiencing little to no action, and push it up to the fire bases heavily engaged. This enabled the firebase supporting the close fight at Combat Outpost Keating to maintain a constant stock level for seamless support. Initially, we pulled ammo from the closest firebase and coordinated with the brigade support operations to push additional propellants, RAP rounds and fuzes by air from outlying firebases. The threat from ground attacks along the main supply route forced us to move the ammo by air versus ground; plus it rapidly built the stocks.

The firing platoon supporting Combat Outpost Keating continued a steady rate of fire for several more days taxing our logistics system. However, the flexibility demonstrated by the brigade SPO, combined with our attaching the 13B staff sergeants to the administrative logistic operation center collocated with the brigade ammunition transfer point, ensured the Soldiers engaged in the desperate fight at Combat Outpost Keating had continuous fire support.

As artillerymen, we understood the requirement to compensate for nonstandard conditions through the five requirements of accurate predicted fire to ensure the artillery unit was capable of providing first round effects on the target for the maneuver commander. The firing platoons' ability to execute fires to standard in accordance with the five requirements for accurate predicted fire was what would produce the greatest effects on the enemy and further providing indirect fires to our maneuver elements.

Management of ammunition was also aided by ruthless adherence to standards of precision through the five elements of accurate predicted fire. The battalion fire direction officer oversaw the adherence to these standards within the battalion. Our emphasis on this enabled the battalion to reduce the expenditure of ammunition during our deployment. This aided the logistic system by reducing haul requirements for artillery ammunition; and expending less ammo by hitting the target helped enhance fighting in the counter-insurgency environment.

Target location. With available technology and a conventional environment, a trained forward observer can achieve effects with the first round on target. However, after years of conducting a counter-insurgency fight, we have seen a degradation of knowledge in the use of forward observer equipment combined with a lack of synchronization of fires with the scheme of

"From our experience thus far, the indirect approach we have taken to maneuver operations has produced the best results within our area of operations. The key to this was setting the team early and ensuring those engaged in the maneuver fight understand this methodology so they can implement according to the intent."

maneuver among our field artillery junior leaders and forward observers. These deficiencies significantly contribute to target inaccuracies. Every patrol that leaves the forward operating base must conduct a fires rehearsal to ensure the maneuver element and observers understand the fire plan and what assets are available.

Firing unit location. Across our brigade area of operations, the artillery and mortars provided indirect fires to their supported maneuver task force. However, there was no requirement for the artillery to mass fires in Afghanistan.

That stated, the artillery and the mortars still had to have accurate weapon location in the fire direction center to ensure accurate range and deflection. The battalion did not operate the Improved Position and Azimuth Determining System for survey and did not operate on common survey for the reasons stated before. However, the howitzers and mortars required accurate survey. In our brigade area of operations, the batteries provided fifth order of survey to the indirect systems within their associated task force area of operation using Global Positioning System and Global Locating Positioning System.

Weapon and ammunition information. Ammunition management was the hardest task the platoon leader and platoon sergeant had to manage. Each howitzer in our brigade area of operations had its own ammunition basic load and, therefore, the crews had to manage the projectile family and propellants effectively. On average, each fire direction center maintained proper muzzle velocity and calibration data on 30 different lots of ammunition and propellants.

At the battalion level, the fire direction officer, in coordination with the battalion S4, ensured he properly distributed the ammunition and propellants to alleviate the unit maintaining 'trash' lots that were not in sufficient quantity to calibrate properly. When the battalion staff and the platoon leaders managed the weapon and ammunition information properly, the fire direction center could compute accurate firing data.

Meteorological information. The common practice to provide meteorological information in Afghanistan was to use the Interactive Grid Analysis and Display System to fulfill this requirement. However, the Interactive Grid Analysis and Display System was a predicted meteorological that was not interpolated. Therefore, we had not used the best available technology to provide meteorological data to meet the five requirements. Each artillery battalion had a Profiler system organic to the unit to provide more accurate meteorological information to the fire direction center. The Profiler system, in coordination with the Navy Operational Global Atmospheric Prediction System, was capable of interpolating atmospheric conditions across a 60 kilometer radius to provide real-time information, ensuring the artillery unit met the requirement of the five requirements of accurate predicted fire. We employed our Profiler system to provide meteorological data for our firing batteries. This provided better accuracy and contributed to a reduction in ammo expenditure as fewer rounds were used in adjustment. Our battalion fire direction officer took the lead in establishing the meteorological station in a location that would support the firebases that are spread over a wide area in the brigade area of operations and ensuring the data was transmitted in a timely manner for use by the fire direction centers.

Computational procedures. Fire direction centers were very efficient in the battalion at executing proper computation procedures and conducting independent checks before processing the fire mission. These checks included processing the mission on multiple systems, validating proper meteorological data, ammunition data and observe locations. It is imperative the fire direction center was the secondary independent check for target elevation. For this independent check, the fire direction center used Falcon View or Tactical Ground Reporting system Net. The fire direction centers in theater did not compute data manually as a secondary check because there was often little room inside the command post to set it up. However, they did use a second Advanced Field Artillery Tactical Data System and Centaur hand-held fire direction computer to conduct the independent checks.

Our first six months in Afghanistan were challenging and demonstrated that, while our training plan was sound for preparing for deployment, there were a number of areas that predeployment training could not adequately cover. The tyranny of the terrain tested our gunnery skills and maneuver elements as we began operating in our area. However, adhering to basic principles of field artillery employment and fire support planning can enable any unit to meet the daunting challenges of delivering fires in Afghanistan. Further, maneuver operations must incorporate elements of an indirect approach to leverage all available resources and remain true to the spirit of counter-insurgency operations. From our experience, the indirect approach we had taken to maneuver operations produced the best results within our area of operations. The key to this was setting the team early and ensuring those engaged in the maneuver fight understood this methodology so they can implement according to the intent.

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A combined patrol with the Afghan National Army in Western Nuristan, Afghanistan. (Photo courtesy of Headquarters and Headquarters Battery, 2nd Battalion, 77nd Field Artillery Regiment)

Finishing with Courage:

I-Corps' joint Fires and effects cell role in MNC-Iraq

A member of the Sons of Iraq, known as "Mr. Bean" by fellow members, receives a payment by Iraqi soldiers in Multaqa, Iraq, Oct. 22, 2009. (Photo by SPC Canaan Radcliffe, U.S. Army)

By COL David J. McCauley and 1LT Sean Bilichka

A delay in payments to the Sons of Iraq threatens to unravel the entire program. The senior leadership of Multi-National Corps–Iraq knows this is a critical and time sensitive issue. A decision was made to engage the highest levels of the Government of Iraq and emphasize the Sons of Iraq program is a serious piece to the national security of Iraq. MNC-I turned to Redlegs of the joint fires and effects cell to accomplish several goals.

As I-Corps began to plan the transition to Multi-National Corps–Iraq, we put considerable effort and planning into the organizational structure of the joint Fires and effects cell. Throughout the preparation for deployment, the general consensus that emerged was the joint Fires and effects cell's structure needed to adapt to Iraq's dynamic operational environment. Lethal strikes were decreasing, and security in the operational environment had improved considerably during XVIIIth Airborne Corps' tenure as MNC-I. To capitalize on this situation, I-Corps adopted a robust, multi-faceted joint Fires and effects cell with a variety of roles and uses. Today, as MNC-I does, the I-Corps' joint Fires and effects cell uses a nonstandard structure to leverage a myriad of capabilities in Iraq's operational environment as the nature of the war transitions from predominantly combat operations to a political struggle within a sovereign nation.

As the last MNC-I joint Fires and effects cell did, the I-Corps' joint Fires and effects cell embraced the idea of "finishing with courage." Courage is the I-Corps' motto and a necessary component in looking for a way to deal with the various challenges that it would face. As we looked to the course ahead, various key dates and times stood out. The national and provincial elections, moving out of cities and transitioning from a Multi-National Corps to a U.S. Forces headquarters all would occur under our watch. Going in to our deployment, we were dealing with something our predecessors did not have — a timeline for the completion of combat operations in the Iraqi Theater of Operations.

A glance at the I-Corps joint Fires and effects cell structure shows many familiar components as well as some that traditionally are not a part of a joint Fires and effects cell structure. Functions such as the joint operation center, force field artillery headquarters and plans and targeting are some of the more traditional elements and incorporate core artillery roles on the modern battlefield. However, organizations such as the electronics warfare coordination cell, corps assessments cell, air and missile defense, key leader engagements, the security agreement secretariat, reconciliation and counter-rockets, artillery and missiles augment the joint Fires and effects cell, allowing for a comprehensive and holistic approach to full-spectrum operations. To enhance the capabilities of these organizations, civilian contractor-staffed research organizations, such as the human terrain team and the Iraqi/American task force, provide invaluable resources to the joint Fires and effects cell.

These capabilities are maximized in theater through a variety of synergistic efforts. By collocating and putting these varied resources under one umbrella, the opportunity to create fusion and unity of effort was increased exponentially. By creating a synchronized rhythm and facilitating interaction between these groups, the joint Fires and effects cell was able to leverage and focus organizations as needed.

In our initial example, a pay dispute arose regarding the Sons of Iraq that required a meeting between representatives from MNC-I and the Government of Iraq. The joint Fires and effects cell used the Corps' assessments cell and conducted an in-depth analysis of the Iraqi government's progress towards reintegration of the Sons of Iraq. The Sons of Iraq program was viewed as a "game changer" throughout the theater. At first, small groups throughout Anbar began to resist, then openly challenge, al Qaeda forces. The decision to cut ties with al Qaeda forces was dubbed the "Anbar Awakening" by Iraqi organizers, and has been hailed as a turning point in the U.S.-led war effort, because soon, this program began to spread throughout the country. U.S. forces originally paid these men to serve as a form of police. As violence decreased, the new goal was for the Government of Iraq to honor its deal with these brave Iraqi patriots and transition them to jobs throughout the government and ministries of Iraq.

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This spurred the reconciliation cell into action to gather atmospherics as to current public opinion on the Sons of Iraq program in order to gauge sentiment toward transition into the Iraqi security forces and ministries. The findings of these reports were transmitted to the key leader engagements cell, and a synchronized engagement plan was developed that refined our movement toward the desired end state.

Key leader engagements are the premier tool in the Corps-level leader's toolbox. By coordinating and prioritizing efforts to reach out to government and military leaders throughout Iraq, MNC-I leaders can ensure that our messaging is clear and well planned. Key leader engagements can occur at various levels, but when dealing with the highest levels of the Iraqi government, we must be sure that our senior leaders stay well informed and succinctly and accurately describe U.S. positions and goals.

The reconciliation cell then can put the MNC-I command team's guidance into action through connections with local and provincial Iraqi leaders. The reconciliation cell and the security agreement secretariat coordinate resulting adjustments and brief the results during the next Joint Subcommittee for Military Operations, Training and Logistics, where the joint Fires and effects cell, as the security agreement secretariat, develops and prepares the commanding general for his co-chair role in partnership with the Iraqi ground force and national police commanders.

The Joint Subcommittee for Military Operations, Training and Logistics provides an opportunity within the construct of the Security Agreement for us to advise and assist our Iraqi counterparts with issues relating to their continued development of their military forces. At the general officer to general officer level, these events

LTG Charles H. Jacoby, commander of Multi-National Corps–Iraq, speaks with an Iraqi leader during battlefield circulation in Samarra, Iraq. Important atmospherics gained during meetings like this are analyzed and interpreted by the corps assessments cell. (Photo by MSG Mark Woelzein, U.S. Army)

function as a chance to engage and inform our Iraqi partners on various issues we see on the horizon as well as engage them in a social setting and build strong relationships. Any issues related to the security agreement are discussed as well, and this provides a forum for U.S. forces to describe how we are conducting operations inside of the sovereign country of Iraq.

Throughout all the stages of development, from planning to operations, the joint Fires and effects cell synchronizes and any issues that might occur across all planning horizons in a comprehensive manner toward one end state. The United States is a reliable and enduring strategic partner to the country of Iraq.

As MNC-I conducted a seamless transfer of authority with XVIIIth Airborne Corps, we also assumed control of the XVIIIth Airborne Corps Operations Order 09-01 which emphasized three lines of effort — security of the forces and the people of Iraq, training and equipping the Iraqi security forces, and construction and facilitation of civil capacity. The joint Fires and effects cell functions to support the commander's scheme of maneuver across all three of these lines of effort. As the new MNC-I, we transitioned to Campaign Plan 09-02 and developed the MNC-I operational targeting design. This design is focused and framed by the three major decisive points in the near future (All combat forces out of major Iraqi cities, setting the conditions for safe and secure parliamentary and national elections and executing a responsible drawdown of forces). The operational targeting design allows us to transition from our current lines of effort to ones that fully embrace the drawdown of forces with the Iraqi security forces in the lead and set the stage for stability operations beyond August 2010.

The fight increasingly is shifting to a political struggle throughout Iraq with violence trending downward. Although lethal operations are diminishing in frequency it is still an important weapon in the commander's tool kit, however, our preferred course of action is to leverage the nonlethal aspects of our organization. The focus of our operations is to maintain pressure on the networks by leveraging all capabilities. This allows us to disrupt the movement of lethal aid and the flow of foreign fighters as well as weaken the financial capabilities of our enemies. These objectives are increasingly being achieved through nonlethal means. We are the first corps element to be operating with a clear change of mission timeline and a defined end state.

As we begin a responsible drawdown and after moving units out of major Iraqi cities, we face the potential for a renewed conflict as groups vie to fill the power void left by U.S. forces moving out of these regions. To stem this potential for renewed violence, we began to work even more collaboratively with both the Government of Iraq and the Iraqi security forces. As this partnership expands, it has become most evident in the transparent targeting process.

Transparent targeting. In a major shift from previous combat operations, the transparent targeting process ensures all operations conducted both notify and include our Iraqi partners. This effort ensures the Iraqis take an increasing stake in their own security and safeguards American forces from potential backlash against unilateral operations. The process shows Iraq's government and security forces that we have an interest in being completely open with our actions in their country and what we view as potential threats to their sovereignty.

The transparent targeting process begins with a collaborative target development that identifies a potential threat. In collaboration with U.S. forces, Iraqi governmental and military agencies begin the process to collect evidence on the targeted individual or network. This information is then presented to a court, much like traditional police operations in the U.S. If there is sufficient evidence, a warrant is issued. When a warrant is acted upon, U.S. and Iraqi forces act together to conduct the apprehension of the individual or network. This process is entirely open, following both the letter and the spirit of the current security agreement, which states, "The U.S. is here at the request of the Government of Iraq, and all operations will be conducted by, with and through the Government of Iraq."

Protecting the force. Our focus is shifting from counter-insurgency operations to protecting U.S. and Iraqi forces to shore up the Iraqi government as it takes the lead. The joint Fires and effects cell provides force protection through varied means, but perhaps the most visible one to Soldiers in the Iraq theater of operations is the Counter-Rockets, Artillery and Mortars system. The Counter-Rockets, Artillery and Mortars system is at several operating bases and has the capability to intercept indirect fire near critical assets and/or provide localized emergency warning near the indirect fire point of impact. The sensor data provides intelligence and targeting information to support responders and field commanders in countering enemy tactics. The joint Fires and effects cell and the Counter-Rockets, Artillery and Mortars cell also provide a liaison between units executing the mission and the Counter-Rockets, Artillery and Mortars Program Manager team to improve the system. The cell coordinates the efforts of civilians at Counter-Rockets, Artillery and Mortars Program Manager, Soldiers and sailors of Task Force 3-3 Air Defense Artillery and various radar units, to provide increased force protection to U.S. forces.

Another way the joint Fires and effects cell is influencing the battle is by reducing the number of enemies by supporting Iraq's reconciliation efforts. A crucial element of reconciliation is the Sons of Iraq program facilitating the reduction of insurgent attacks and the increase in cooperation of local and provincial governments, tribal leaders and U.S. forces. As of May 2009, the Government of Iraq has control over all 90,000 Sons of Iraq in nine provinces and is responsible for paying all Sons of Iraq salaries. While completing the transfer of control of the Sons of Iraq and ensuring Sons of Iraq payments, U.S. forces continued to work with Implementation and Follow-up Committee for National Reconciliation to transition Sons of Iraq members to other viable employment. The Government of Iraq has transitioned more than 13,000 Sons of Iraq into the Iraqi security forces and more than 5,000 Sons of Iraq into Government of Iraq ministries. We will continue to partner with the Implementation and Follow-up Committee for National Reconciliation in transitioning all the Sons of Iraq through the end of 2009 and early part of 2010.

Strength in diversity. Traditional roles of the artillery also make up the efforts by the MNC-I joint Fires and effects cell. Using the benefits offered by precision-guided munitions, such as

"As we begin a responsible drawdown and after moving units out of major Iraqi cities, we face the potential for a renewed conflict as groups vie to fill the power void left by U.S. forces moving out of these regions."

Excalibur and Guided Multiple-Launch Rocket System rockets, the joint Fires and effects cell can shape the battlefield in methodical and surgical means that is unparalleled in modern warfare.

The joint operation center Fires cell is responsible for the traditional integration of conventional and precision surface-to-surface and air-to-surface delivered Fires. Based on increased security conditions in the operational environment, the number of lethal surface-to-surface and air-to-surface delivered munitions dropped off significantly in the last six months. The largest number of missions in the last six months were 155-mm illumination projectiles in support of terrain-denial missions. As with a high-intensity conflict, the interaction with the corps air liaison officer is critical. Although not employing lethal strikes on a frequent basis, the shows of force/shows of presence and rapid response to troops in contact from the available air assets are critical to the warfighter on the ground.

The force field artillery cell also conducts traditional field artillery missions in support of force protection operations. The sensors section coordinates the distribution of the 200-plus radar assets across the Iraqi Theater of Operations to counter the indirect fire threat. The Q-48 Light-weight Countermortar Radar, the most predominant counter-indirect fire sensor, is an indispensible asset against counter-indirect fire due to its mobility, low cost and upgrades to improve an already combat-tested system. As the enemy and his tactics, techniques and procedures continue to transform, the primary purpose for the counter-indirect fire radars is to provide input into the Counter-Rockets, Artillery and Mortars sense and warn systems to warn troops and determine the points of origin, rather than traditional sensor-to-shooter counterfire assets.

These operations occur entirely in the sovereign country of Iraq, presenting numerous challenges when dealing with governmental, religious and tribal officials. A constant dialogue must be maintained to ensure operations and actions happen with the approval of the Government of Iraq. The joint Fires and effects cell facilitates these discussions with the key leader engagement cell.

The key leader engagement cell, comprised of four officers and one civilian, is responsible for preparing the corps' flag officers for upcoming engagements with senior Government of Iraq and Iraqi security force leadership. The cell accomplishes this by synchronizing operational and tactical level key leader engagements in support of the corps' communication strategy. One field grade staff officer from the key leader engagement cell resides in the communications strategy fusion cell — a cell rounded out by public affairs and information operations officers. This cell produces consistent themes and messages that support U.S. government, force and corps guidance. The key leader engagement cell also has one field grade intelligence officer that resides in the corps assessment control element who is responsible for providing all of the background and analysis the Government of Iraq and Iraqi security force leadership.

As the nature of the war in Iraq continues to move toward providing support to and partnering with the Government of Iraq, traditional artillery roles and core competencies, augmented with new capabilities, have rejuvenated the branch and continue to prove the versatility of the artilleryman. As the conflict has evolved, so too has our function as a joint Fires and effects cell. By embracing this change and providing a clear focus on the challenges and opportunities that lay ahead, we are preparing ourselves for success and look forward to finishing with courage.

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MG John D. Johnson, deputy commanding general of operations of Multi-National Corps–Iraq, discusses issues with Sons of Iraq leaders at a conference. By having an open dialogue with the leaders, Multi-National Corps–Iraq has been able to quickly respond to any concerns that may arise. (Photo courtesy of Multi-National Corps–Iraq Reconciliation Cell)

Fires AUTHOR GUIDE

Article subjects. *Fires* strives to be "forward-looking." We're at the dawn of a new Army transformation. Many exciting things are taking place in the field and air defense artillery fields of expertise. Article subjects should therefore be current and relevant. Writers may share good ideas and lessons learned with their fellow Soldiers, as exploring better ways of doing things remains a high emphasis with *Fires*.

If an article subject is significant and pertains to field artillery or air defense artillery and its diverse activities, as a rule of thumb we'll consider it appropriate for publication. Article subjects include (but aren't limited to) technical developments, tactics, techniques and procedures; how-to pieces, practical exercises, training methods and historical perspectives (Army Regulation 25-30, Paragraph 2-3, b).

We are actively seeking lessons-learned articles which will enhance understanding of current field and air defense artillery operations. The magazine's heart is material dealing with doctrinal, technical or operational concepts. We especially solicit progressive, forward-thinking and challenging subject matter for publication. In addition to conceptual and doctrinal materials, we encourage manuscripts dealing with maintenance, training or operational techniques.

Good ideas or lessons-learned articles should have two closely related themes: one, what did you learn from what you did? The second theme is: what is most important for others to know, or what will you do differently in the future? Include only the pertinent information on how you did it so someone else can repeat what you did. Don't include a blow-by-blow of your whole deployment. The article's emphasis should be that your unit has a good idea or some lessons-learned to share.

Steps involved in submitting an article to *Fires* are outlined following.

All articles should have the bottom line up front; however, to better ensure your chances of publication, we recommend that you read all the criteria contained in this article as well as apply the guidance contained in the *Fires* style manual at sill-www.army.mil/firesbulletin/style.asp for more details. We do not pay for articles or illustrations other than providing contributors with complimentary copies of the magazine.

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If you get permission to use someone else's graphic or photo, especially from the private sector, we need proof of that in writing.

Getting started. Select a relevant topic of interest to the U.S. Army field and air defense artillery community. The topic must professionally develop members of these fields. Write an outline to organize your work. Put the bottom line up front and write clear, concise introduction and conclusion paragraphs. Follow the writing standard established in Army Regulation 25-50, Preparing and Managing Correspondence, Section IV (the Army writing style), and Department of the Army Pamphlet 600-67, Effective Writing for Army Leaders, especially Paragraphs 3-1 and 3-2.

The Army standard is writing you can understand in a single rapid reading and is generally free of errors in grammar, mechanics and usage. Also see *Fires*' style manual. Maintain the active voice as much as possible. Write "Congress cut the budget" rather than "the budget was cut by Congress." (Department of the Army Pamphlet 600-67, Paragraph 3-2, b[1]). Write as if you were telling someone face-to-face about your subject: use conversational tone; 'I,' 'you' and 'we' personal pronouns; short sentences and short paragraphs. Articles should be double-spaced, typed, unpublished manuscript, between 3,000 and 3,500 (or less), but no more than 5,000 words, including inline citations as appropriate.

Authors should check their articles' contents with unit commanders or organization directors or S2s/G2s to ensure the articles have no classified or operations security information in them. Clearance requirements are outlined in Army Regulation 360-1, Chapter 5, Paragraph 5-3. Headquarters Department of the Army/Office of the Secretary of Defense clearance is required if your article meets any of the criteria listed there. Article clearance is further covered in Paragraph 6-6, with procedures on how to do so outlined in Paragraph 6-9. The bottom line on most article clearance is discussed in Paragraph 6-6. While you certainly may ask your local Public Affairs Office's advice, it is the "author's responsibility to ensure security is not compromised. Information that appears in open sources does not constitute declassification. The combination of several open-source documents may result in a classified document."

So while the *Fires* staff may question the sensitivity of an article we receive, it is not our responsibility to officially clear articles, however if we do see something within an article that might cause concern, we reserve the right to withhold publication of such an article until it is thoroughly vetted with the proper subject matter expert or Army authority. But it still remains the author's responsibility, as outlined in Army Regulation 360-1, not to compromise national security or U.S. Army operational security matters.

We reserve the right to edit an article, so the *Fires* staff will edit all manuscripts and put them in the magazine's style and format. The author of an article or interviewee will receive a courtesy copy of the edited version for review before publication, however, if the author does not get back to the *Fires* staff with any questions or concerns within a specified suspense date (typically five to seven working days) it will be assumed the author concurs with all edits and the article will run as is.

Except in the case of Armywide news items, authors should not submit a manuscript to *Fires* while it is being considered elsewhere. A comprehensive biography, highlighting experience, education and training relevant to the article's subject and credentialing the author as the writer of the article also is required. Include e-mail and mailing addresses and telephone, cell and fax numbers. Please keep this information current with *Fires* for as long as we're considering the manuscript.

Photographs and graphics. See the "*Fires Bulletin* Photographer's Guide" on page 36.

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Leaders

By LTC Timothy J. Daugherty

LTC Timothy J. Daugherty (center) stands with leadership from his battalion, 5th Battalion, 82nd Field Artillery Regiment, and his partner Iraqi brigade. (Photo courtesy of LTC Timothy J. Daugherty, U.S. Army)

As an Army, we are trained to conduct an after-action review on every event and share information. After recently returning from my fifth deployment to Iraq as a battalion commander, it seems as if something is missing unless I share some successful tactics, techniques and procedures in leadership I used during these two years of command with the last year being while deployed to Iraq. This is in no way an insinuation I have it all figured out and my battalion was flawless due to these lessons learned; it is simply to share some thoughts and ideas with other units and commanders.

This article outlines a list of methodologies that worked for me and allowed my unit to perform admirably as Iraqi trainers, all while firing artillery rounds in our brigade area of operations. To highlight just a couple of quantifiable results, we had only four non-deployable Soldiers left back on rear detachment, no disciplinary issues above a field grade level and statistically the fewest serious incident report events in the brigade. Additionally we had no suicides or serious injuries, no Soldiers lost in combat due to friendly or enemy action, more than 3,800 field artillery rounds fired in train-up and Iraq without incident and no serious discipline issues upon return from Iraq.

Iraq overview. My unit was the 5th Battalion, 82nd Field Artillery Regiment which is the organic Field Artillery Battalion of the 4th Brigade, 1st Cavalry Division (1CD). My brigade deployed to southern Iraq in the vicinity of the Dhi Qar province after a year of preparation that included two training center rotations. The first at the Joint Readiness Training Center at Fort Polk, La., and the other at the National Training Center at Fort Irwin, Calif. One could make the assessment that 4th Brigade, 1CD was a prototype "advise and assist brigade." My battalion initially was not aligned with my brigade headquarters. We had one battery task organized under a cavalry squadron from the brigade and various hot gun sections and radar systems throughout the brigade's area of operations. The battalion headquarters and remainder of my battalion, as well as some other units task organized to us, had a security mission in central Iraq in the vicinity of Logistics Support Area Anaconda.

After about four months, the battalion received a change of mission; to focus on standing up and training the new 41st Iraqi Army Brigade in southern Iraq near the brigade's headquarters in Dhi Qar province. After about three months of training the 41st, we then moved with the 41st into our area of operations in south eastern Iraq near the Maysan province for our final five months.

Soldier caring plan. Early in my command, we developed the *Black Dragon* Soldier Caring Program to provide some synergy and detailed mandatory guidance for what is expected from leaders as well as provide some methodology units should look at when establishing and maintaining the relationship with our Soldiers. The topics discussed below were outlined in the program. The program document was disseminated widely in the battalion and talked about in numerous forums and meetings as the backbone of how we wanted to treat Soldiers. In my opinion, this was the most important document we had in the battalion. Implementing this program allowed us to maintain a very small number of Soldier discipline issues over a very stressful two-year period. The program allowed us to have a constant Soldier caring theme and provide a baseline of not only how we would deal with our Soldiers, but also what is expected of our leaders.

Active leaders. Leaders must be engaged and get ahead of issues. The question I enjoy asking leaders the most is, "Tell me one thing you have done recently or you are doing in the near future that lets your Soldiers know you care about them?" I actually ended every meeting with that question to my subordinate commanders. It does not need to be some huge or extensive event each time, but what is really important is that our leaders ask that question of themselves. There are numerous good answers but only one bad answer to the question; that is no answer at all.

In the Soldier Caring Program, we outlined some opportunities units could put into action and it gave ideas on how to answer the question above. Soldiers knew one part of being a leader in the 5-82 Field Artillery Battalion was an expectation, a set of standards and guidelines focused on the Soldiers' well being. Leaders were required and encouraged to adhere to those standards and guidelines.

Weekly sensing sessions. Weekly, we had the chaplain go and ask Soldiers 10 specific questions on quality of life issues. Topics such as pay issues, work areas, leader attitude and living conditions were discussed. This gave the chaplain a specific mission to interact with Soldiers beyond traditional religious duties. The results of those informal yet quantifiable sensing sessions were briefed at the weekly command and staff meetings in a very nonthreatening way. Unit commanders then openly and briefly discussed those concerns. More often than not, it was an issue that the unit needed help with from the battalion. Often, a Soldier would identify an issue or problem no one in the room was tracking. These weekly sessions seemed to put us in

ship 101

front of issues we were not tracking, and it was a good sounding board for Soldiers to vent without any consequence in a very non-attribution type environment.

Counseling. We know the center of gravity for taking care of our Soldiers is for our first-line leaders to know our Soldiers. The key is how we make that happen. In my experience, I see leaders are good at directive counseling where we give them a form letter of rules with which they must comply. What we are not good at is interactive counseling, where we get to know the Soldiers and develop an individual plan for those under our care. We found putting out clear minimum standards on what is required for initial, monthly and special counselings helped clear up any confusion. We put those minimum standards in our battalion Soldier Caring Program. Additionally, any disciplinary incident required the Soldier's complete counseling packet to be brought to the battalion commander and command sergeant major for review. As a result, we had few Soldier discipline issues. This initiative fed on itself and enhanced the concept of proper counseling.

Paddle. I really think metaphors work. The one we used for team building in our Iraq deployment was of a paddle; we were in the same boat moving to the same location. The comparisons are many. If one person does not paddle and accomplish his fair share of the work, it makes it much harder for everyone else. The theme continued, if someone refused to paddle, we might have to discard him from the boat (or for literal purposes chapter them out of the Army). The Soldiers found some more humorous meanings within the metaphor, such as Soldiers who were absent without leave were those who chose to jump out of the boat. Why jump out when the island (or in this case home) was literally thousands of miles away?

To further solidify my team building metaphor, I actually had a paddle that I took to all my battalion formations. Any time I administered a Uniform Code of Military Justice action, I would use a marker to put the Soldier's name on the paddle. I would ask them if they were going to remain in the boat. The reference caught on and so it was used often to motivate Soldiers and get them back home safely.

Fitness theme. It is imperative at the battalion level and below that the commander finds ways to reach as many Soldiers as possible on a personal basis and on a physical fitness level. One way we can do that as leaders is to have a fitness challenge of some kind in our units. Studies show sound physical conditioning is absolutely paramount to Soldiers being able to handle a tough year-long deployment. All leaders should bring something to the plate physically. They must be able to run, lift, perform chin-ups, road march, etc. at a higher level than the majority of Soldiers in their formations.

So in keeping with this thought process, I used a personal bench press challenge. I issued to all the Soldiers in my battalion to meet or surpass a specific goal. In order to become a member of the "Big Dog" club they had to be able to bench press 300 pounds. This was coupled with a challenge to beat my best lift. Use whatever your skill set is to offer a challenge to your Soldiers. Those who beat you can get some kind of recognition and perhaps, a free lunch with you, rights to park in your space for a week or even a four-day pass. We had a battalion t-shirt with a strength patch that was given to Soldiers who successfully completed the challenge. This type of challenge helps establish your unit as a physical formation and broadens your contact with your Soldiers. It also gives them a way to relate to their commander on a personal level. We came back from Iraq at a much higher level of performance from the strength aspect of fitness than we would have without the

Soldiers of 5th Battalion, 82nd Field Artillery Regiment, conduct physical training with their Iraqi partners. (Photo courtesy of LTC Timothy J. Daugherty, U.S. Army)

challenge. As a reference point, in a battalion of about 550 Soldiers, we had 58 Soldiers bench press our internal standard of 300 pounds and numerous others got very close.

In processing/contract. Prior to deploying to Iraq, as part of our quarterly battle rhythm, we held an in-processing week at the battalion level for new Soldiers that we called Black Dragon University. We consolidated the new Soldiers and gave them some classes on standards, programs in the battalion, policies and procedures and we discussed the upcoming calendar. We also had them go through Soldier readiness processing. It culminated on the last day when the command sergeant major and I did physical training with them as well as discussed and signed a contract with each Soldier. The one page contract referenced the top issues that typically get Soldiers in trouble and lets them clearly know what the possible consequences were to their actions.

We also explained we would not be a unit that allowed harassment of our Soldiers and we cared for them greatly. We sent NCOs who seemed to forget standards frequently through the week as well. Before our return from Iraq, the command sergeant major and I did a second contract with them outlining some key concerns we wanted to ensure we personally addressed with each Soldier. The command sergeant major and I knew that we personally gave our vision to every Soldier on what we expected of them and we clearly outlined for them what some consequences were for some common misconduct, such as driving under the influence.

Letter writing campaign. In garrison and in Iraq, I wrote two to three letters to family members of our Soldiers each week. I would pick a Soldier who seemed to need a pat on the back or I thought might have issues in the future. Knowing I was in contact with their family members seemed to build a bond with them. In general, the letters were very positive, and I would simply let the family member know their Soldier was in my unit and I was proud of them. It is a tactic, technique and procedure that provided a high probability of connecting with a Soldier and gaining his confidence.

My personal effort in writing these letters also was a good example for company and battery commanders, which I think, caused them to be even more aggressive at their levels to establish their own methods of relationship building. There was a strong bond between me and some of the family members of Soldiers I was concerned about. I got numerous letters and phone calls from family members that I would usually defer to the battery-level chain of command to work and resolve. I think those family members then helped keep their Soldiers on track because they knew me on a personal basis.

CSM Melvin Carr of 5th Battalion, 82nd Field Artillery Regiment, talks to the battalion in Iraq following an awards ceremony. (Photo courtesy of LTC Timothy J. Daugherty, U.S. Army)

Private Gleep. Our second metaphor we used to highlight training at the first-line leader level and the consequence of leaders not training Soldiers was called PVT Gleep. We obtained an urn-looking item that weighed about 25 pounds. On it, we wrote the story of a fictitious PVT Gleep who died due to his first-line leader conducting improper precombat checks/precombat inspections. When we identified units or leaders who failed in those principles, they would have to carry PVT Gleep around.

The overarching theme of the burden of carrying PVT Gleep's urn around was much less than the burden we could carry the rest of our lives as leaders if we fail to train our Soldiers properly and a Soldier dies due to our training deficiencies. Our leaders who had to carry the urn didn't perceive it as harassment because we also awarded it to units in a positive manner. Either way, leaders (including myself) would carry it around to events like battalion runs and meetings. It gave leaders a constant reference of the grave consequences that faced us if we didn't prepare our Soldiers properly.

Unit and Soldier awards. All units need an awards program for their subordinates. There are lots of opportunities for awards across the Army. The unit needs to identify a few and work to get their subordinate units' hard work recognized. For example, after my deployment, my battalion ended up winning a few corps safety awards and a Forces Command logistics award.

To take it one step further, we also wanted to develop a method of awarding our Soldiers who go above and beyond their peers, as well as our batteries that upped the ante. The awards we ended up using to identify our top performers were called the "Man Up" and the "PVT Gleep Leader" awards. We gave the "Man Up" award twice a year to the Soldiers (one per battery) who embodied the concept of being a Soldier who took care of tasks he was given in professional and unassuming manner. The "PVT Gleep Leader" was awarded at the rank of staff sergeant or above. It was given to the NCOs who demonstrated the concept of taking caring of our Soldiers. All of our winners received a nice gift, in addition to an article written about them in the local paper and one of their ID tags placed on a plaque.

The other method we used to motivate and instill pride in our units was awarding guidon streamers at the company/battery level. These streamers were awarded for specific areas and were given to the company with the best performance. We often made this competition a part of another program such as a battalion fitness test or part of a battalion inspection. The units seemed to appreciate adding the "Top Supply" type streamers to their guidon. We made sure we did these competitions in a positive manner so that it did not become a negative factor leading the units to stop sharing and helping each other.

Leader development. In the last several years the Army has accelerated it promotions from the junior ranks, and this acceleration has come with a price. The cost

is we have some very talented junior leaders who simply lack a lot of experience that is gained with time in service. There is also a huge disparity of experience between the company and battery level of leadership. On average, a company commander has six years of experience while a battalion commander has about 18 years of experience. This gap has expanded more in the last several years as the Army has accelerated promotions to captain.

A remedy to fix this inequality is to have a functional and diverse leader development program in place. An example of this in action was when we held an overnight officer training exercise in the field which involved physical training, road marches, weapon ranges, leader reaction course, simulation training, land navigation and leadership classes. This exercise culminated in a surprise, team-building, late-night barbecue out in the training area. Another example is we had an officer and NCO staff ride to the National World War II Museum in New Orleans, La.; it also was a terrific event.

Baring special events, a good baseline to always have are old-fashioned leader development presentations to cover key topics. No matter what type of event you decide to have, putting these on the training schedule and resourcing them is the key. These types of discussions and training at the leader level enabled us to stay on top of the professional development of our junior leaders.

Platoon-level safety. One of the things we started early is to empower the platoon-level leadership to understand composite risk management and be able to make good decisions on tough situations. In order to do this we made the risk assessments center of gravity at the platoon level, rather than at the battalion level. The focus at the platoon level drives home the point that our junior leaders were the ones who would be able to stop a poor decision from being made at the point a task is executed. We started this concept in garrison long before the deployment and continued a platoon-level focus throughout our time in Iraq.

The platoons were required to conduct a risk assessment (functional and not fancy) on any event that involved vehicles moving or Soldiers conducting a mission. In Iraq, the reality of a fast-paced mission dictates that platoons are "where the rubber meets the road."

A vehicle did not move without a platoon-level risk assessment and approval from the platoon leadership. I attribute this tactic, technique and procedure to enabling us to have a very small number of safety issues or incidents, including our two training center rotations and then the year in Iraq.

Show initiative to your unit. Our Soldiers want leaders who think out of the box, and we tried numerous things to keep the enemy off balance. One example we employed was getting several local video repair shops around Fort Hood, Texas, to donate dozens of old and worthless video cameras before our deployment. We took these to Iraq and put them in simplistic black wooden boxes we had one of our NCOs make for us. We then attached these boxes to our meteorological helium balloons and flew them about 100 feet off the ground in areas we thought had the most insurgent activity. We would also periodically set one of these floating cameras in a part of our area of operations we had concerns with and tell the locals we were conducting a test flight. Sometimes at night we would untie one and let it go. From 100 feet, these boxes with their balloons looked like a real surveillance devices and the locals were convinced these were legitimate systems.

To keep the enemy guessing we also extensively used nonlethal ambushes. To achieve this, we would pick a secondary road with limited traffic, place some brush or other object on it to slow vehicles down, and when a vehicle would approach, a team would ascend to conduct a surprise vehicle inspection. All of this was done jointly with Iraqi security forces of course. This led up to us finding a large amount of illegal weapons and improvised explosive device building material.

Both of these examples gave the Soldiers a sense their leadership was looking hard for alternate solutions. It also provided a high level of local misinformation in our area of operations which kept the enemy from having a full understanding of exactly what we technically could and could not do. The bottom line is, in each location we implemented a full-spectrum of TTPs, enemy attacks went down across the board, and the Soldiers were very proud of that fact. It was confirmed the enemy eventually started moving their operations to other areas due to these pressures on their systems.

Positive theme, no slang allowed. One of the real measures a unit can take in preparation and training is to eliminate any negative opinions of their deployment. In addition, the chain of command must enforce a policy of respect for the people in whose country they are deployed. It is imperative as Soldiers and leaders that we cannot get involved with or express our personal or political opinions about current operations. Soldiers feed negatively on that, and it becomes a cancer, resulting in our Soldiers dealing with the population in a less than respectful manner.

"It is imperative as Soldiers and leaders that we cannot get involved with or express our personal or political opinions about current operations. Soldiers feed negatively on that, and it becomes a cancer, resulting in our Soldiers dealing with the population in a less than respectful manner."

Our job is to follow our orders and accomplish the missions we are given, and not to determine what that mission is. I understand the concept of providing our higher headquarters with honest assessments on issues, but once the decision is made, we are either part of the solution or part of the problem. We need to find the essence of the mission we agree with and push forward from there. To do otherwise is counterproductive and of no value.

A year is a long deployment and if we start to let negativism creep into our formations, the result inevitably will be counterproductive. In a year of aggressive operations, my battalion did not have one complaint lodged against it nor was there ever an accusation of any inappropriate conduct with any Iraqi personnel.

Leader involvement in decisions. We found as a field artillery unit, we were very comfortable with the tactic, technique and procedure of reviewing our standing operating procedures frequently. Our leadership needed, wanted and deserved a forum to discuss evolving TTPs and trends that might change our current standing operating procedures. The system we used to provide our leaders that forum was a

Photo courtesy of LTC Timothy J. Daugherty (U.S. Army)

monthly SOP update. In order to accomplish this, we would hold a platoon sergeant and above leadership development session to distribute information and discuss trends we were seeing. The key was to then have two people in charge of the proposed changes. They would then initially vet them with the leadership before implementation at the LDP session. Then, during the session, these NCOs would lead the discussion and provide a one or two-page summary which clearly outlined the proposed changes. They would vet them with the leadership before implementation.

The standing operating procedures was kept in a 3x5 binder with a simple circle ring to keep the pages together. This made the "on the spot" replacement of pages very easy. I kept the standing operating procedures binder on my desk, and throughout our last year in Iraq we had made more than 40 changes. Checking for an updated SOPs was probably my most frequent pre-combat inspection as I was spot checking convoy movements. This gave us a feeling we were staying on top of any evolving tactics, techniques and procedures we were seeing and provided a forum to share information at the platoon level.

T-shirts. Another relatively simple plan we implemented based on our ongoing teamwork concept was to get a battalion t-shirt made in lieu of company-level t-shirts. I got the idea for a battalion-themed t-shirt after a discussion with a Soldier who had never deployed before. He asked me if I was ever afraid of getting hurt on a deployment. That question was the base for our t-shirt motto, "We do not get hurt, we give hurt." Although, perhaps a little overly aggressive in its context, it helped us to have an aggressive attitude. Those red *Black Dragon* t-shirts were very well known at any and all locations we were stationed or even visited.

We also gave them out at our deployment ball, our reenlistment NCO gave them out as incentives, and we also gave some to junior leaders and Soldiers as perks. We had plenty to go around without Soldiers having to pay a lot for them, and the pride on their faces during battalion runs was remarkable. My fellow commanders did enjoy harassing my Soldiers who fell out of a battalion or brigade run since they were easy to spot in their red shirts. In response, I would always claim the fallouts were their Soldiers who had bought the shirts on E-bay.

Platoon certification program. A battalion-level leader does not earn their paycheck by sitting behind a desk, so as a consequence I was out and around the troops often. I found it essential to visit and certify each platoon every quarter to ensure they were not getting complacent. The visits also provided me with a forum to teach, coach and mentor each platoon, especially the platoon leadership. We would stand a platoon down for 48 hours. They were given the first day to get some rest and prepare themselves for certification. On day two of the stand down, my battalion master gunner, communications and maintenance teams would ascend on the selected platoon and give them about an eight-hour certification. The command sergeant major, battalion S3 operations Soldier and I were part of the process and were at all the after-action reviews. Those certifications were an essential ingredient to ensure bad trends were not finding their way into our formations and good trends were. Although I constantly looked at the platoons, this 48-hour formal certification allowed us to certify every platoon and make sure things were not slipping through the cracks.

I do not want to leave you with the impression the battalion should have been named the "good ship lollypop," borrowing from my boat metaphor one last time, and there were no problems. I do, however, think effective communications can make a difference in increasing a unit's productivity and will reduce negative conduct.

Lieutenant Colonel (P) Timothy J. Daugherty, field artillery, is the interim commander of the 89th Military Police Brigade at Fort Hood, Texas. His deployments include Operation Desert Storm as a battery fire direction officer and company fire support officer in Iraq for 2nd Battalion, 3rd Field Artillery Regiment. He was also a battery commander in Bosnia for 5th Battalion, 41st Field Artillery, and a battalion S3 as part of a Desert Strike mission in Kuwait for 3rd Battalion, 82nd Field Artillery. He was also the aide-de-camp to the Multi-National Corps-Iraq commander in Iraq in 2004, deputy commander in 41st Fires Brigade in Iraq in 2006, and the battalion commander of 5th Battalion, 82nd Field Artillery Battalion in Iraq from 2008 to 2009.

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The Parallels to Iraq in Afghanistan

By Doug Grindle

A handful of Iraqi kids sit on a mound of dirt on the outskirts of the small town of Harami in the southern Diyala province. The harsh midday sun beats down on their uncovered heads. Few people live in the empty houses, which are long-since abandoned. Many of the doorways sag with neglect. The flimsy wire livestock pens are dusty and empty. Around the town, fields lie dried up and barren of crops. The winter wheat and beans wilted and blew away years ago.

Harami suffered badly under al Qaeda in Iraq during its nearly five-year reign of terror. Barely 25 miles from Baqqubah, the provincial capital, this is one of the last places in the province to be reclaimed from al Qaeda in 2008.

Al Qaeda wrecked whole swathes of Diyala province. As it took over from the government, those rich enough to flee did so. The poor were trapped and stayed behind. Al Qaeda brought drought with them because the fields had been fed with water from the Diyala River near Baqqubah, but war closed the taps and the plants died. With few other options, people soon started working for al Qaeda as couriers, bomb-planters and guardians of hidden weapons caches.

Children sit on the outskirts of Harami Village in south central Diyala province, Iraq. Villagers are trickling back in after al Qaeda was ousted in the winter of 2008-2009, but they still face little water or electricity and few jobs. (Photo courtesy of Doug Grindle)

Turn for the worse. Life for these people turned sharply worse. Working for al Qaeda meant fighting the Americans and Iraqi forces, which took a heavy toll. Villages turned against each other. The pay was meager, and prices of food and fuel were high. And life under al Qaeda was tense, as the terrorists instituted strict Sharia law, cut off the hands of thieves and killed people who fell afoul of the new regime. Cars lay burned out and abandoned near the killing houses where al Qaeda meted out its grisly justice. Darkness had fallen over Diyala.

"It was a weird life," said Sheikh Riyath Tami Abas, whose tribe lives in southern Diyala. "The people would get killed little by little. Nobody could walk in the street or go to Baqqubah. They could not get married. No one could visit neighbor to neighbor."

Yet in spring 2009, the terror group is all but gone. Almost a dozen families have come back to live in Harami. Life here is still tough. There is no running water. The irrigation ditches are still dry. There is no electricity, but Soldiers say it is secure.

Return to normalcy. A joint security center sits on the edge of town. Inside is a joint detachment of the Sons of Iraq militia and the Iraqi army. Outside the center, a few workers place brick on brick, building a brand new extension. No one fears death threats or the return of al Qaeda. An American patrol stops in at the joint security center at Harami, parking its Stryker fighting vehicles in a ragged crescent. The young American lieutenant speaks with the local Sons of Iraq commander, who says

al Qaeda is unpopular and has no presence here at all, though it is trying to return across the province.

"I think they're done," reflected 1LT Jeb Townsend of B Company, 3rd Battalion, 21st Infantry Regiment. "They had a bad ideology. It just does not work on the ground."

Only a year earlier, al Qaeda's hold over almost all of southern Diyala was iron tight. A narrow ribbon of road connecting Baqqubah and Baghdad was secure, and government officials and security forces traveled that road. But venturing even a little way into the countryside was unwise.

Then over the course of six months almost everything changed. The story of the turning of south central Diyala is a relatively simple one, though simple does not necessarily mean easy.

For years, the coalition had not gone down the roads in the countryside. Improvised explosive devices were well hidden and abundant, and there weren't enough extra Soldiers to push far — the U.S. Army was occupied in its back and forth struggle with al Qaeda in Baqqubah.

But then, Baqqubah started to turn. By spring 2008, the road from Baqqubah to Baghdad was secured. And by fall 2008, it became feasible to push into the countryside.

New people, new ideas. And new people came in with new ideas. The 2nd Battalion, 8th Field Artillery, 1st Stryker Brigade Combat Team, 25th Infantry Division, rotated into south central Diyala. It added one extra company to the mix in the countryside south of Baqqubah, which was a 100 percent increase in troops. Most importantly, it introduced new ideas of how to secure the area.

In previous years, patrols pushing down a road would be blown up, so there was never a lasting presence. But now the battalion called in the Iraqi army. Iraqi army engineer platoons, backed by U.S. Army explosive ordnance disposal teams, cleared the improvised explosive devices. Behind them, the Iraqi army built up a new system of joint security centers. They built eight stations quickly, added another four in coming months and constructed three police stations. An Iraqi brigade spread its soldiers across the ground, mostly holding villages and checkpoints on roads.

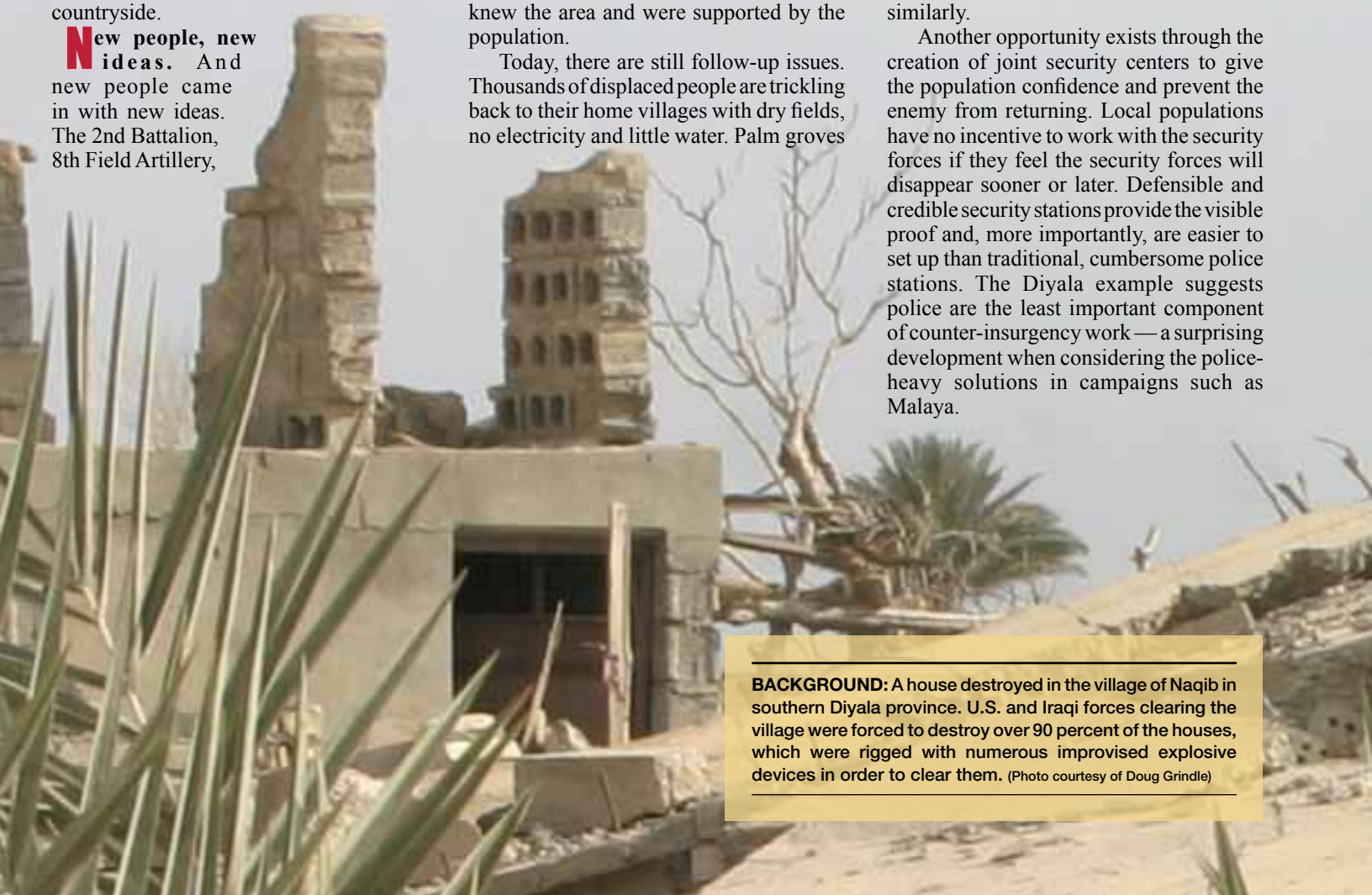
The coalition forces recruited about 3,000 men for the Sons of Iraq — locals who knew the area, many of whom likely fought against the coalition — and installed them in the joint security centers along with the Iraqi army. The U.S. sent roving patrols from station to station, inspecting, encouraging and improving. Al Qaeda was routed. It had no effective counter to the continued presence of security forces who knew the area and were supported by the population.

Today, there are still follow-up issues. Thousands of displaced people are trickling back to their home villages with dry fields, no electricity and little water. Palm groves along the Diyala River slowly are being cleared of al Qaeda's abandoned munitions and booby traps. An estimated 2,000 houses were destroyed and have to be rebuilt. But these are generally the problems of the transition to peace-building, not war-fighting.

Comparison to Afghanistan. In many areas of Afghanistan today, the situation resembles that of Diyala. There are huge agricultural areas where people are too poor to flee violence and become drawn into it, depending on terror dollars. Coalition forces are often too scarce to maintain a lasting presence in the areas they patrol. The national government is too frail to counter a deep-seated insurgency.

In the same way Diyala benefited from a new direction, Afghanistan also needs a new way of doing things. One possibility includes creating a local militia that pays large numbers of local fighters to keep terrorists out of the villages. Without the Sons of Iraq working for the coalition instead of against it, the situation in Diyala would have been all but hopeless. Their recruitment tipped combat power in Diyala toward the government forces. The Sons of Iraq were encouraged, controlled and empowered as they operated with the Iraqi army. A well-paid tribal militia would benefit Afghanistan similarly.

Another opportunity exists through the creation of joint security centers to give the population confidence and prevent the enemy from returning. Local populations have no incentive to work with the security forces if they feel the security forces will disappear sooner or later. Defensible and credible security stations provide the visible proof and, more importantly, are easier to set up than traditional, cumbersome police stations. The Diyala example suggests police are the least important component of counter-insurgency work — a surprising development when considering the police-heavy solutions in campaigns such as Malaya.



BACKGROUND: A house destroyed in the village of Naqib in southern Diyala province. U.S. and Iraqi forces clearing the village were forced to destroy over 90 percent of the houses, which were rigged with numerous improvised explosive devices in order to clear them. (Photo courtesy of Doug Grindle)

"Expanding the Afghan National Army must take precedence over expanding the Afghan National Police. Political concerns that local militias might create local warlords or act as a counterpoint to the national government cannot be ignored. But the Iraqi example suggests that local militias can be loyal to the national government, especially when they are well paid, well-appreciated. And they are essential for success."

In addition, the U.S. Army must backstop the whole effort. The addition of U.S. forces in southern Diyala was tiny — an increase in the number of U.S. companies from one to just two. But what it did is allow the U.S. forces to support Iraqi army operations in any sector where there might be a terrorist problem. During a six month period, U.S. forces made several air assaults into rural areas where al Qaeda was trying to mass or was hiding. U.S. forces could be used flexibly because the forces were not stretched, holding ground better held by the Iraqi army or Sons of Iraq. U.S. forces were able to go after al Qaeda itself.

A rich security environment. In conclusion, U.S. forces need to create a rich security environment. It must pay for a local militia. Expanding the Afghan National Army must take precedence over expanding the Afghan National Police. Political concerns that local militias might create local warlords or act as a counterpoint to the national government cannot be ignored. But the Iraqi example suggests that local militias can be loyal to the national government, especially when they are well paid, well-appreciated. And they are essential for success.

The Taliban and other terrorist networks are following their own variant of this strategy. They arm and pay the villagers. They settle in for the long haul, building training bases and village strongholds. It's a plan that al Qaeda used for almost five years in Diyala and was successful for most of the time. But the security forces defeated al Qaeda in Diyala, and it can defeat the extremists in Afghanistan as well.

Doug Grindle is a freelance reporter who has written for more than 30 outlets about Iraq and Afghanistan over the past five years. He has contributed regularly to C-SPAN, Fox News Radio and over 30 local television affiliates, radio stations and newspapers across the U.S. He is a graduate of Columbia Journalism School.

An Iraqi army soldier at a joint security center at Harami Village, Diyala province, Iraq, spring 2009. The joint security center is manned by Sons of Iraq and the Iraqi army. (Photo courtesy of Doug Grindle)

Fires PHOTOGRAPHER'S GUIDE

PFC Alli Hargis, assigned to Joint Combat Camera-Iraq, shows Iraqi children photos on her camera's display screen during her visit to document a humanitarian-aid mission in the village of Dexeboth, north of Mosul, Iraq, Oct. 25, 2009. (Photo by PO1 Carmichael Yepez, U.S. Navy)

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Employing special munitions in the contemporary operating environment

By CPT Brady B. Johnson

Past conflicts have seen the use of multiple types of munitions to facilitate the ground commanders' missions. As a force multiplier, indirect fires evolve to exploit weaknesses in the enemy's ability to counter friendly operations. Russian tactics during World War II saw the use of massed fires to decimate entire city blocks with follow on infantry and armor forces. "From antitank battles in the summer of 1943 it clearly appears that the main reasons for Soviet success were: (1) mass fire of artillery pieces echeloned in depth, (2) employment of mobile antitank reserves, and (3) secure protection from the air. It must not be forgotten, however, that without the skill and courage of the gun crews victory would have been impossible. This employment of massed fires, supported by infantry and armor were used to great effect to crush German resistance and ensure the success of the Russian army" (See COL P. Afanayev's "Antitank Action of Soviet Artillery" in the Nov. 1943 issue of *Field Artillery*). The consequence of mass fires as the primary tactic of the Red Army was total destruction of the local infrastructure resulting in a loss of critical support and services needed to sustain the soldiers and civilians after the cessation of hostilities.

Changing tactics and lessons learned. The conflict in Iraq, like Russian doctrine during World War II, has resulted in continually changing tactical developments and lessons learned that influence current and future employment of indirect fire. The use of dual-purpose improved conventional munitions was extremely effective when employed by U.S. forces during Operation Desert Storm and the 3rd Infantry Division

Soldiers from B Battery, 1st Battalion, 109th Field Artillery Regiment, 56th Stryker Brigade Combat Team, fire 155-mm illumination rounds from a M777A2 howitzer at Joint Security Station Istaqlal, Iraq, Apr. 11, 2009. (Photo by SSG Mark Burrell, U.S. Army)

during Operation Iraqi Freedom. Dual-purpose improved conventional munitions were the munitions of choice for killing tanks and mechanized enemy forces in the open. A large drawback to dual-purpose improved conventional munitions in the current tactical environment is possibilities of duds. "Once we determined a target would be engaged best by 155-mm fires, we employed Paladin, principally with (high-explosive) rounds. We stayed away from (dual-purpose improved conventional munitions) in urban areas for obvious reasons (potential for unexploded bomblets)" (See BG Lloyd J. Austin III's "3rd ID in OIF: Fires for the Distributed Battlefield" in the October 2003 issue of *Field Artillery*).

The duds produced by dual-purpose improved conventional munitions became a point of concern during combat operations and in post-combat stability and support operations. Armored vehicles destroyed by the 3rd Infantry Division Fires Battalion's use of dual-purpose improved conventional munitions during Operation Iraqi Freedom were found scattered along the route north. While the effectiveness of these munitions has been proven, dual-purpose improved conventional munitions have been found less valuable in a combat environment due to the negative impacts derived from the possibility of duds in the path of follow-on forces and hazards to the civilian population. As a result, both large-scaled massed fires the Russians employed and their use has been re-evaluated in tactics, use and employment, resulting in the limitation of massed fires in urban environments and dual-purpose improved conventional munitions on the battlefield.

Special munitions. Like conventional munitions and dual-purpose improved conventional munitions, the effects of special munitions on the battlefield must and have undergone changes. Employment of illumination, smoke and rocket-assisted projectiles are a crucial aspect of the contemporary operational environment of the counter-insurgency and full-spectrum environment. The ongoing conflicts within Iraq and Afghanistan have proven the need for continual use of all fire support assets and have illustrated more directly the continual validity of indirect fires. Cannon and rocket artillery are the ground commander's premier 24-hour weapon systems, and the Global Positioning System precision munitions now being used by both systems have made artillery more viable, crucial and responsive for today's ground forces in urban and counter-insurgency environments.

Special munitions, illumination and rocket-assisted projectiles play vital roles in the commander's decisions affecting ongoing operations. Alternate operational procedures developed by units in country and adaptation of these techniques by all indirect fire assets and maneuver forces will give the ground forces, as a whole, the ability to operate more freely and reduce collateral damage while increasing the effectiveness of the total force package and indirect fire assets supporting them.

During Operation Iraqi Freedom III, units supporting the 116th Cavalry Brigade faced increased demands for special munitions from their command structures on the ground. The artillery platoons supporting the maneuver forces in northern Iraq had to adapt to new criteria and ways of implementing fires to meet the commander's intent. Built up urban environments were the greatest challenges to employing indirect

Force Protection Operation Center blasts illumination rounds over the city of Mosul, Iraq, to heighten security, Dec. 18, 2005. (Photo courtesy of 138th Mobile Public Affairs Detachment)

fires. The suburban environment and the countryside also required creative new ways to reduce collateral damage while supporting ground units engaging the enemy.

During the 116th Cavalry Brigade's relief in place/transfer of authority with on scene forces, numerous emergency missions fired in support of Iraqi and coalition forces, with both illumination and rocket-assisted munitions, were fired. Illumination was fired in support of U.S. and Iraqi troops in contact and for the Iraqi police being engaged within city limits. Often during the relief in place/transfer of authority, rocket and artillery fires from the enemy using historical points of origin required the use of rocket-assisted projectiles from the M119A1 howitzer due to the enemy's firing from ranges exceeding 12,000 meters. With the arrival of the M109A6 Paladin in the area, the increased capabilities and ranges of 155-mm munitions were brought to bear on these points of origin using regular munitions and special munitions from the Paladin in addition to the M119A1.

An illuminating concept. Leading up to and during the handover in Feb. 2005, the 116th Cavalry Brigade fire support element began to ask for illumination canister data before approving planned missions. At first, determining data seemed difficult as *Field Manual 6-40 Tactics, Techniques and Procedures for Field Artillery Manual Cannon Gunnery* did not give a way to determine specific canister data, but only the effective illumination area based upon illumination safety procedures are outlined. The Advanced Field Artillery Tactical Data System does not account for the continued ballistic trajectory of the canister in excess of 70 pounds, and the brigade wanted to know if determining specific data was possible.

Until this point, ground commanders believed the illumination canister is unpredictable in flight after releasing the flare. Convincing the maneuver elements that the canister did not become unstable after ejecting the parachute — rather it continues on a stable ballistic trajectory — was an obstacle in effective fires employment. The artillery fire direction center looked at the FT 155-AM-2 Tabular Firing Table part 2 illumination data and developed an alternate method for illumination missions. This procedure became standing operating procedure for the 116th Cavalry Brigade and reduced collateral damage caused by illumination canisters early in the deployment.

Predicting data. Within the illumination safety procedures outlined in *Field Manual 6-40 Tactics, Techniques and Procedures for Field Artillery Manual Cannon Gunnery*, the fire direction center developed a better method to predict projected canister data accurately. Early in the process, a direct correlation between the gun target azimuth/range on the Advanced Field Artillery Tactical Data System and range to impact in the tabular firing table was identified. To determine canister data, an illumination mission was processed to pinpoint azimuth and range to the point of illumination. After the illumination target was processed, the yellow target icon appeared on the screen. The intervention point screen in the Advanced Field Artillery Tactical Data System was then opened and ranges/gun target azimuth on the first window were recorded. The gun/target azimuth and range are the critical pieces of information for the canister data.

Safety. The yellow target on the Advanced Field Artillery Tactical Data System is the graphical representation of the 600 meters standard height of burst and does not take into account the canister as it continues its flight. Not only does the canister continue in a wartime environment, but safety measures in the Advanced Field Artillery Tactical Data System at a continental U.S. range can be violated, sending the canister outside an impact area or outside control measures. While illumination safety is followed to determine maximum illumination area to keep illumination canisters within the impact area, the safety measures in the Advanced Field Artillery Tactical Data System do not prevent the possible effects violation the canister can create, nor does the max illumination area address where the canister actually is going.

Once range and gun/target azimuth are determined, tabular firing table part 2 illumination is used to determine the canister's range to impact, correlating to the range to target. Column 7 of Table A lists the range-to-impact in relationship to the range-to-target. The second mission is fired using the gun as the observer firing illumination**.** A polar mission is fired using the gun target azimuth (found in the original mission), range to impact (taken from the tabular firing table) and altitude (from the map or digital terrain elevation data from the Advanced Field Artillery Tactical Data System). Interpolation can be used to find exact range to impact, but often the impact area chosen was a field or open area with a couple of hundred meters on each side

allowing for 100 meters of movement between ranges in the tabular firing table. Once computed, this polar mission gave the grid to the predicted canister impact area. High angle missions were conducted the same way.

Within the city limits of urban areas, another unique problem with illumination occurred. Based on urban growth and sprawl, manipulating charge usage to find safe impact areas was not always enough. Changing charges did allow for enough range or too much range to bring the casing down in a safe area either overshooting or undershooting safe impact areas. The solution was to change the height of burst. The desired range in the tabular firing table was taken from the range-to-impact column. The corresponding quadrant elevation was noted and the height of burst adjusted using the "recalculate" function on the Advanced Field Artillery Tactical Data System until the desired quadrant elevation was reached. While conducting cordon and searches in urban areas, maneuver units used night vision goggles to capitalize on the adjusted illumination. Using night vision goggles made the higher illumination extremely effective and prevented the night vision goggles from being washed out or giving their position away while providing the necessary support. All procedures were similar to the earlier technique with the quadrant elevation adjustment the only addition.

Techniques confirmed. Validation of these techniques came numerous times during Operation Iraqi Freedom III in northern Iraq. U.S. Air Force explosive ordnance disposal teams often visited the fields plotted as impact areas and picked up canisters that did not burrow into the ground. Many times, the canisters continue into the ground to an undetermined depth leaving behind only a perfect circle with obturated band marks clearly continuing to rotate as the round entered the earth.

Limiting danger and collateral damage. The Air Force explosive ordnance disposal unit would either drop off the retrieved canisters to units or destroy them. In most cases, the canisters were found within 70 meters of the predicted grid. As the deployment continued, using this procedure limited the danger to the civilian populace to falling canisters. Additionally, it reduced collateral damage to houses, vehicles and other buildings.

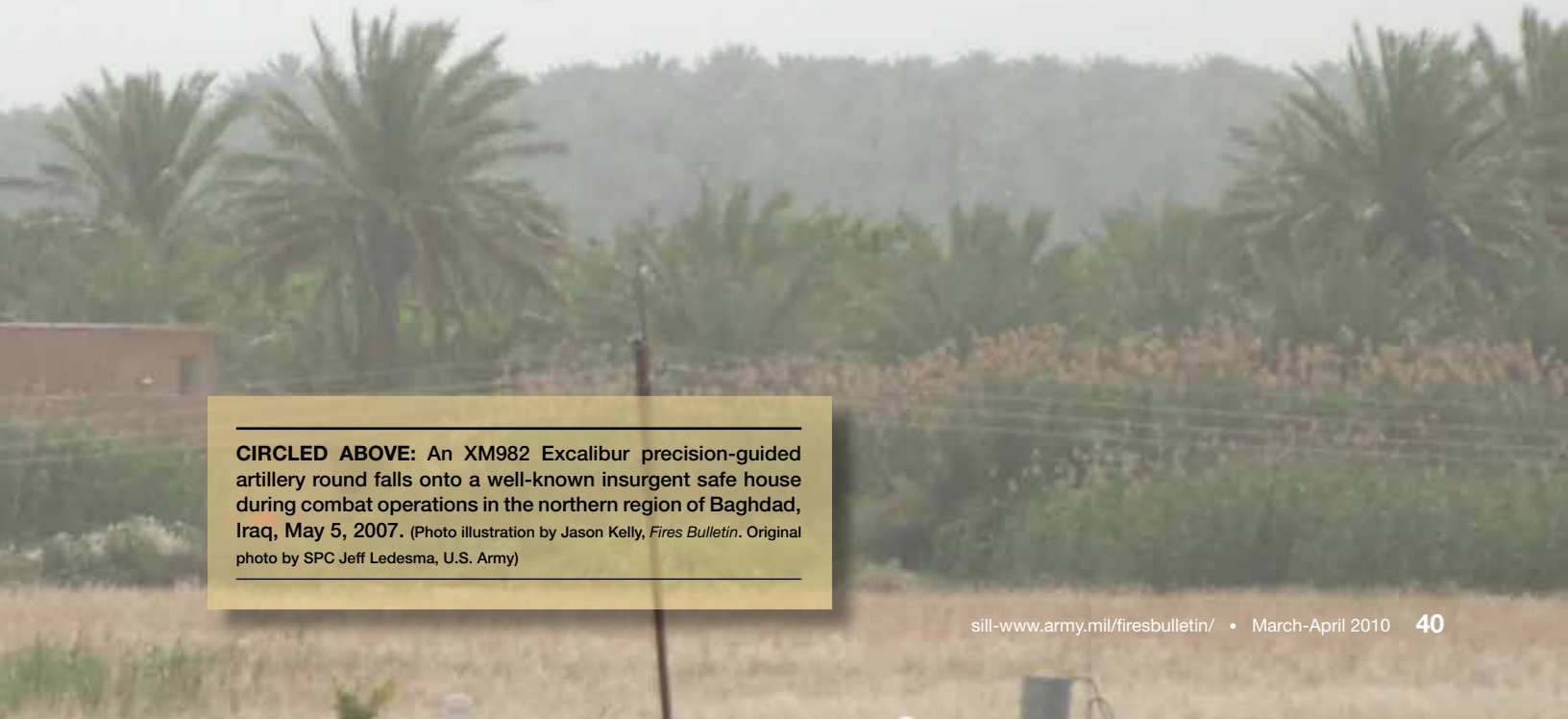
The rocket failure grid. A similar procedure was used to employ rocket-assisted projectiles. Preparation for fire training, registration and show of force missions included the need to compute the rocket failure grid. The current safety procedure requires 6,000 meters from the point of impact back along the gun target line to have enough room in case of rocket failure. Using rocket and non-rocket tables in the FT 155-AO-1, a similar procedure can be used to determine failure data. The original target is fired and the quadrant elevation and gun target azimuth are recorded.

Under the non-rocket table, the quadrant elevation is looked up and recorded. A polar mission, using the gun as the observer, is fired with the direction from the first mission used and the distance corresponding to the QE non-rocket tables entered. The computed grid is the rocket failure location or non-rocket flight path.

In Iraq, units were required to compute this grid for planned fires. In one instance of rocket failure, this technique was validated. After firing had ceased, the forward observer team went to the impact grid where it observed the round land. Shrapnel, burnt grass and disturbed earth were found within 100 meters of the impact grid computed at a distance of 21 kilometers. This validated the procedure used to obtain the failure grid and eliminated collateral damage.

As operations continue in Iraq, Afghanistan and other areas of the world, artillery will continue to find a way to support the ground commander no matter the situation. Future operations and weapons will change current trends and techniques. Artillery needs to continue to adapt and change with current needs just as 116th Heavy Brigade Combat Team did. Our innovation as a branch and forward thinking by Soldiers in the field are our future. But as always, the artillery will be there *Whenever, Wherever*.

Captain Brady B. Johnson, field artillery, commands A Battery, 1st Battalion, 148th Field Artillery Regiment, at Pocatello, Idaho. Previously, he deployed as part of Operation Foal Eagle to Korea as the 34th Infantry Division fire support element in Feb. 2008. Captain Johnson served as the battalion fire direction officer, 148th Field Artillery and underwent two brigade war-fighting scenarios as FDO. He also served as battalion firing platoon fire direction officer for 1st Battalion, 148th Field Artillery fire direction officer for 1st Platoon, A Battery, 1-148th Field Artillery a fire support team leader for A Troop, 2-116 Armored Recon Squadron before being assigned as the squadron fire support officer for the 2-116th Armored Recon Squadron.



CIRCLED ABOVE: An XM982 Excalibur precision-guided artillery round falls onto a well-known insurgent safe house during combat operations in the northern region of Baghdad, Iraq, May 5, 2007. (Photo illustration by Jason Kelly, *Fires Bulletin*. Original photo by SPC Jeff Ledesma, U.S. Army)

Fires Bulletin 2010 Photo Contest

This annual contest obtains high-quality photos that tell the story of today's U.S. Army and U.S. Marine Corps field artillery and U.S. Army air defense artillery units and Soldiers conducting training or engaged in full-spectrum operations. These photos may appear as a cover or other shots for future editions of the magazine, as part of the Fires Center of Excellence poster series or in other esprit de corps or strategic communications projects. The competition is open to any military or civilian, amateur or professional photographer.

Two Prize Categories – Six prizes. A first place prize of $500, second place prize of $200 and third place prize of $75 will be awarded in each of two categories: (1) training for combat/stability operations and (2) actual combat/stability operations. Winning photos will be posted on the magazine's website at sill-www.army.mil/firesbulletin and Facebook page at http://www.facebook.com/FiresBulletin.

Rules. Photos not meeting the following rules will be disqualified:

- Only photos taken between 1 July 2009 and 30 June 2010 are eligible.
- A maximum of three photos per photographer can be submitted.
- Photos can be entered only by the photographer who took them.
- Each entry must meet the requirements of the specified category and be received by the magazine no later than 1 August 2010.
- Each photo must be a color jpg or tif image with little or no compression.
- Each photo must be taken with a camera with a resolution of five megapixels or better on its highest resolution setting (jpg image file size should be greater than two megabytes in most cases). Photos cannot be manipulated to increase resolution.
- Images cannot be manipulated other than the industry standard for darkroom processing, such as dodge, burn, crop, etc., as per Department of Defense Directive 5040.5, "Alteration of DoD Imagery."
- Each submission must include the photographer's name, unit/affiliation, email address, mailing address and phone number. Caption information must include who, from what unit, is doing what, where and when (date) in the photograph — for example: "SGT Joe B. Smith, C/2-20 Fires, 4th Fires Brigade, fires the M777A2 howitzer during unit qualification training at Fort Hood, Texas, Jan. 5, 2010."
- Photos cannot be copyrighted or owned by an agency/publication; the image must be cleared for release and publishable in the magazine.

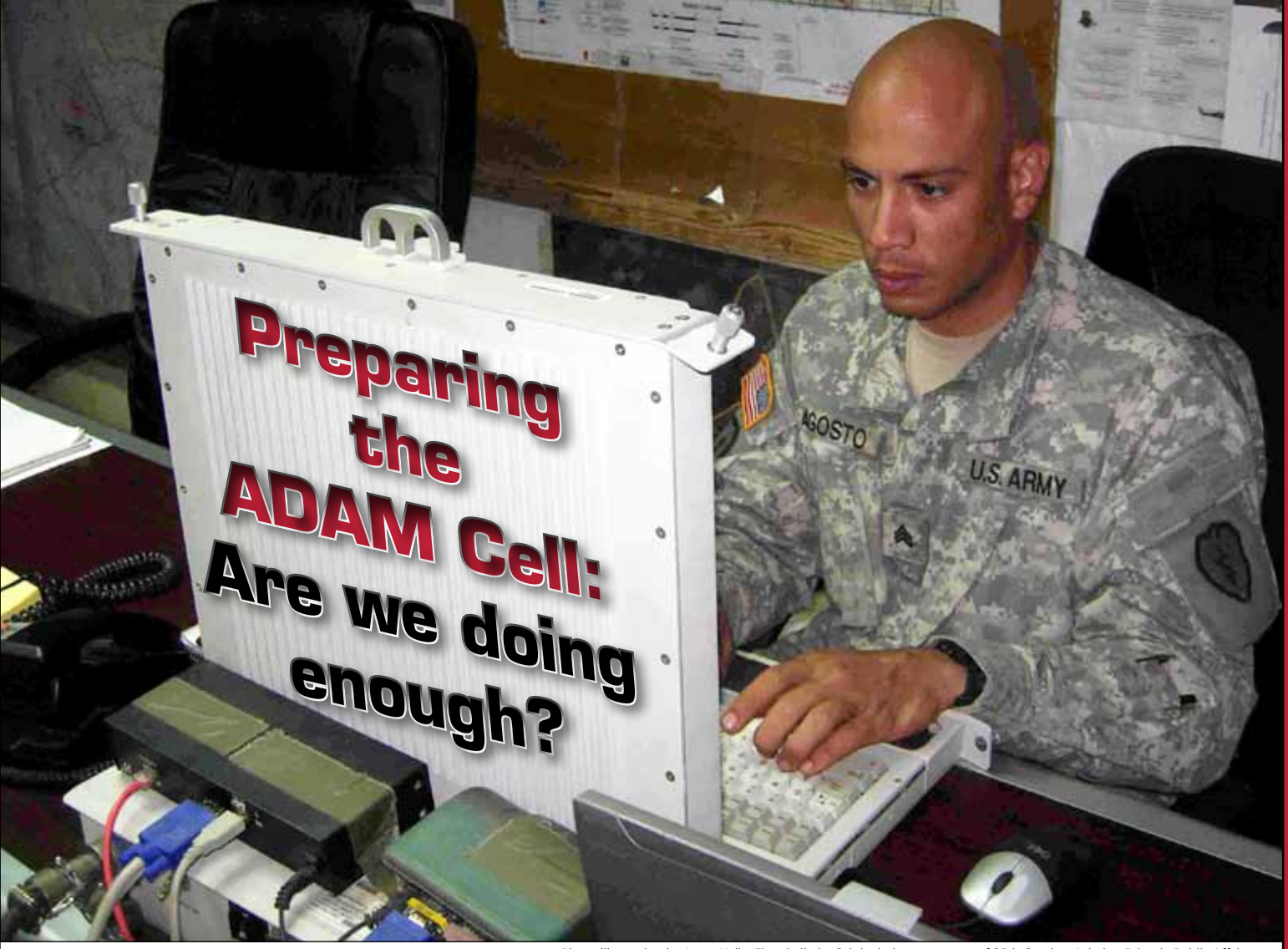
Judging. A panel of editors, professional photographers and military personnel will select winners. The judges' decisions will be final. Judging criteria is as follows.

- Power and impact of the message that the image conveys
- Composition, clarity, lighting, focus and exposure of the image
- Creativity and originality

Submissions. All submissions may be used at the discretion of the magazine staff. Photos can be sent by email or compact disk (CD). CDs will not be returned.

- Email image files (one image per email) to Fires Bulletin at firesbulletin@conus.army.mil. Mark the subject line as "2010 Photo Contest/Photo #1 (2 or 3), Entry Category – Your Last Name."
- Each entrant must email his or her rank, full name, mailing address (permanent preferred), phone number and a secondary email address for contact purposes.
- Mail CDs to ATTN: Photo Contest at P.O. Box 33311; Fort Sill, OK 73503-0311.
- FedEx or UPS submissions to Building 758, Room 7, McNair Road, Fort Sill, OK 73503-5600.

Questions. Contact the Fires staff by email at firesbulletin@conus.army.mil or by phone at DSN 639-5121/6806 or 580-442-5121/6806.



Preparing the ADAM Cell: Are we doing enough?

Photo illustration by Jason Kelly, *Fires Bulletin*. Original photo courtesy of 25th Combat Aviation Brigade Public Affairs.

By CPT Petrus J. Engelbrecht

The air defense and airspace management cell provides important capabilities to the brigade combat team. It serves as the brigade combat team's link to air defense assets, provides the commander with situational awareness of the third dimension and enables the unit to rapidly bring all direct and indirect fires to bear upon the enemy. The cell also is air defense artillery's most important and visible contribution to the Army's tactical echelons. As a branch, air defense artillery has not prepared its Soldiers fully for the important and challenging assignment in the brigade combat team's air defense and airspace management cell.

The cell was conceived during a turbulent time as the Army transformed from a division-centric organization to one whose primary tactical unit was the modular brigade combat team. During this same period, the short-range air defense units were being removed from divisions and most were deactivated. The air defense and airspace management cell was created to provide vital capabilities to the brigade combat teams.

Since air defense units no longer habitually support brigade combat teams, the air defense and airspace management cell serves as the commander's expert on air defense matters. Doctrinally, the cell plans and coordinates air and missile defense operations; however, because there are no air defense weapon systems organic to the brigade combat team, air and missile defense planning is limited. The air defense and airspace management cell helps the brigade combat team staff develop aerial intelligence preparation of the battlefield, template enemy air defense artillery sites and recommend passive air defense measures. It also advises the brigade combat team commander to request additional air defense assets when analysis determines they are required.

Due to the strategic importance of our Patriot forces and the limited availability of other air defense assets in the Army's inventory, it is improbable that a brigade combat team would receive these assets. However, when collocated on the battlefield with other air defense units, the air defense and airspace management cell coordinates with them to determine which brigade combat team assets can be defended. A more likely asset that may support a brigade combat team is a Sentinel radar, which provides the local air picture to the brigade combat team. Furthermore, through the air defense and airspace management cell's connection to the Joint Data Network, the cell receives and disseminates air and missile early warning.

The air defense and airspace management cell provides an air picture, contributes to airspace deconfliction for the brigade combat team and serves as the expert air defense planner. The cell establishes connectivity with local and joint sensors to receive the air picture. Then, it can contribute to the commander's situational awareness of the third dimension by developing and displaying the air picture. The cell contributes to airspace management and deconfliction, minimizing the potential for fratricide. More importantly, airspace integration, synchronization and deconfliction allow the brigade

combat team to target enemy forces rapidly.

The air defense and airspace management cell helps the brigade combat team staff with airspace command and control by receiving airspace coordination measure requests from subordinate units and forwarding them through proper channels for inclusion in the airspace control order. The cell then receives and displays the order to enable rapid deconfliction of the airspace. It maintains close ties with other airspace users (fires, intelligence, surveillance and reconnaissance and aviation) in the brigade combat team and helps them with airspace planning. Additionally, the air defense and airspace management cell may plan and coordinate aviation operations, normally in conjunction with the brigade aviation element.

As critical contributors to the brigade combat team staff, these air defense and airspace management cell Soldiers must be highly proficient. The branch must overcome the current shortfalls in preparing its Soldiers for the brigade combat team air defense and airspace management cell. I will use doctrine, organization, training, materiel, leadership and education, personnel and facilities as a guide to discuss some of the shortcomings and to make recommendations on how to improve on them. These recommendations are based, in part, on observations at Battle Command Training Program brigade full-spectrum exercises and interviews with air defense and airspace management cell Soldiers and trainers at the combined training centers. This article also was influenced by the ADAM/BAE Strategic Plan Brief 2009 created by the U.S. Army Aviation Center of Excellence, Fort Rucker, Ala.

Doctrine. Doctrine establishes common approaches to military tasks, promotes mutual understanding and enhances effectiveness. It is a menu of practical options that allow us to learn from others' experiences and helps us think about how to best accomplish the mission (*Field Manual 3-0 Operations*). *Field Manual (Interim) 3-01.50 Air Defense and Airspace Management Cell Operations* is the primary field manual that governs the air defense and airspace management cell. Although it contains relevant technical information, it lacks pertinent information that covers the full spectrum of operations that the air defense and airspace management cell will conduct as part of a combined arms team.

This field manual (interim) must be rewritten, taking input from the field and providing air defense and airspace management cells with common approaches and a menu of options that enhances their performance. It must cover airspace command and control, air and missile defense and aviation planning and operations, and not be limited to the current operating environment. The focus of the manual must be operations, as opposed to the technical focus of the current field manual (interim).

Organization. The current organization of the air defense and airspace management cell must be reconsidered. Currently, two majors, an air defender and an aviator, are assigned to the air defense and airspace management cell/brigade aviation element. There is no clear guidance of who is in charge, which causes inefficiency and needless friction.

The Aviation Center of Excellence conducted a recent analysis of the brigade combat team airspace management cell/brigade aviation element organization. The center recommended the creation of a brigade air-ground integration cell under a lieutenant colonel, who could direct all airspace users and serve as the bridge to the brigade combat team commander (ADAM/BAE Strategic Plan Brief 2009). The brigade air-ground integration cell would include the fires cell, tactical air control party, air defense and airspace management cell/brigade aviation element and Navy liaisons (if assigned). This would mitigate the challenges caused by having two field grade officers with the same mission and greatly enhance cohesion and unity of effort.

Training. Upon assignment to an air defense and airspace management cell, an air defender faces some immediate challenges. Most young air defenders lack combined arms training, have little or no experience in the maneuver world and are unfamiliar with the brigade combat team's operations, equipment and organization. In addition to these challenges, the officers sent to air defense and airspace management cells receive only cursory training on the capabilities and operations of this important asset. Improperly trained officers have difficulty articulating to the brigade combat team commander what they bring to the fight and, almost inevitably, are tasked out somewhere where they 'can be useful' in the eyes of the commander and staff. This situation is so pervasive that air defenders expect to be tasked out upon arrival to the brigade combat team.

"As critical contributors to the brigade combat team staff, these air defense and airspace management cell Soldiers must be highly proficient. The branch must overcome the current shortfalls in preparing its Soldiers for the brigade combat team air defense and airspace management cell."

The only formal schooling for the air defense and airspace management cell is the small, under-resourced and infrequently conducted Air Defense and Airspace Management Cell Course formerly conducted at Fort Bliss, Texas and now taught at Fort Sill, Okla. Currently, this is the best training available for air defense Soldiers and officers being assigned to air defense and airspace management cells. The course is not resourced properly with dedicated cadre. It is conducted by Warrant Officer Basic Course instructors on Warrant Officer Basic Course equipment and in Warrant Officer Basic Course buildings. This limits the throughput of the course severely, since the Warrant Officer Basic Course instructors cannot teach the Air Defense and Airspace Management Cell Course concurrently with a Warrant Officer Basic Course. Nonetheless, the instructors provide excellent training bolstered by their numerous operational experiences in air defense and airspace management cells. The course culminates with a three-hour, simulation-driven exercise where students operate in an air defense and airspace management cell and respond to various injects such as call-for-fire, immediate airspace requests and other airspace command and control specific events. Nonetheless, the course comes up short with regard to instruction on air defense and aviation planning and execution, which are important aspects of air defense and airspace management cell operations.

A first step in overcoming these pervasive issues is including

the three week-long Air Defense and Airspace Management Cell Course as a part of Air Defense Artillery Captain's Career Course. This enables captains to receive better training; however, a major assigned to an air defense and airspace management cell feasibly could have completed Air Defense Artillery Captain's Career Course more than five years prior.

The best course of action is the creation of a resident course that should grow from the existing Air Defense and Airspace Management Cell Course and the recently approved Air Ground Integration Course mobile training team program of instruction. This brigade air-ground integration cell course would teach the full spectrum of operations and not focus only on the current operational environment. Creating a brigade air-ground integration cell course can have an immediate, beneficial impact throughout the Army.

ADAM cell specialist SGT Annia Rowe of 3rd Brigade Combat Team, 25th Infantry Division, confirms connectivity on the Tactical Airspace Integration System Bullfrog computer system inside the Air Defense and Airspace Management Shelter in Tikrit, Iraq, Oct. 5, 2007. The ADAM shelter is organic equipment to all brigade aviation elements in infantry brigade combat teams and contains a full suite of communications and airspace management systems. (Photo courtesy of 25th Combat Aviation Brigade Public Affairs)

In its ADAM/BAE Strategic Plan Brief 2009, the U.S. Army Aviation Center of Excellence recommended the following. "This effort should result in a full (brigade air-ground integration cell program of instruction) and program that includes hands-on exercises conducted in a simulated (brigade air-ground integration cell) combat environment complete with digital feeds, communications and role players to provide input and friction. The course collective capstone exercise should replicate fires, joint, air assault, (close air support, close combat attack) and nonlethal operations. Additionally, (brigade aviation element) personnel should receive (unmanned aerial system) oversight skills training. The course should include all grades in joint scenario based training. (U.S. Air Force, U.S. Navy and U.S. Marine Corps) personnel should receive slots in the class just as they do in brigade combat teams."

"This type of crawl, walk, run training provides initial skills training and adequate collective friction upon culmination. Since the training is standardized, cell fidelity is not required and (brigade air-ground integration cell) designated personnel can attend when they become available, usually prior to assignment. Likely, a (brigade air-ground integration cell) operator and (brigade air-ground integration cell) leader differentiation will separate the initial portion of the training, ultimately bringing all participants together in the collective portion. The resident course should serve as a doctrinal development center and support the proponent of (air-ground integration and airspace command and control) publications and training. It also serves as the developmental hub for future concepts and requirements of the (brigade air-ground integration cell). By constantly remaining in contact with the mission and its personnel, the (brigade air-ground integration cell) course serves as continuity for current operations and analysis for future development."

Materiel. An air defense and airspace management cell's equipment is robust and effective. There are a few minor improvements that can be made, such as including a secondary Tactical Airspace Integration System and a system that correlates the air picture being received from numerous sources that will enhance and augment air defense and airspace management cell capabilities.

Leadership and education. Officers assigned to the air defense and airspace management cell must understand how the brigade combat team operates and be comfortable in the brigade combat team tactical operations center. We must codify how we grow and prepare these officers and ensure they have the same opportunity to command as those who are assigned as S3 operations officers and executive officers. According to the analysis in the ADAM/BAE Strategic Plan Brief 2009, the current perception is that they do not have the same opportunities. If this perception is reality, it must be corrected. If it is merely a perceived issue, we must overcome this perception if we wish to have quality officers volunteer for these assignments.

If the brigade air-ground integration cell concept is accepted at the brigade combat team, the lieutenant colonel position would increase career progression opportunities further for air defense, field artillery and aviation officers. This would allow career progression for air defense and airspace management cell officers to flow from captain in an air defense and airspace management cell to major in an air defense and airspace management cell and, finally, to a brigade air-ground integration cell officer as a lieutenant colonel. The lieutenant colonel then would have extraordinary experience in brigade combat team operations and could be used further at division staff or on a battlefield coordination detachment.

For each level of assignment, there must be concurrent level of training in the Professional Military Education system. Integrate training from familiarization to employment into all Professional Military Education programs.

Personnel. Soldiers are assigned to the air defense and airspace management cell too late in the units' Army Force Generation cycle to be integrated properly into the brigade combat team staff and to complete necessary training with the unit. They need to be with the brigade combat team as it builds from individual to collective training which culminates with the brigade combat team's combat training center rotation. According to cadre at the combat training centers, they commonly observe this issue of undermanned air defense and airspace management. Normally, there are shortages across all ranks. The air defense and airspace management cell might be fully manned immediately before the unit deploys, forcing Soldiers to conduct on-the-job training in Iraq or Afghanistan, where mistakes can have dire consequences.

The air defense and airspace management cell's success at the combat training centers, and by extension in theater, is related directly to the cell's manning strength. As a branch, we must ensure that every effort is made to get the right people to the air defense and airspace management cell early enough to be fully integrated members of the team.

Facilities. Any increase in the training of air defense and airspace management cells will require additional facilities and resources, especially if the brigade air-ground integration cell course is adopted. The brigade air-ground integration cell course would require facilities with the appropriate access to joint agencies that have the capacity and equipment to train one-third of the Army's air defense and airspace management/brigade aviation elements every year to keep pace with personnel turnover and operational tempo.

The air defense and airspace management cell is a significant and vital part of the brigade combat team and our branch. The cell provides aerial situational awareness and allows airspace management to allow freedom of action and aid in fratricide prevention. It is the link to air and missile defense forces and provides early warning of aerial or missile attack. Furthermore, the cell conducts air and missile defense and aviation planning for current and future operations.

In addition to being an important member of the combined arms team, the air defense and airspace management cell is air defense artillery's exemplar to the tactical Army. We must prove to the tactical Army that we are professionals, true experts at our jobs and that we are value added to an organization by properly training and preparing our Soldiers for the air defense and airspace management cell. The brigade combat team commanders and staff officers of today are the leaders of tomorrow's Army. The impression we convey to these officers will have a lasting effect.

The air defense and airspace management cell deserves the branch's support across the doctrinal, organizational, training, materiel, leadership and education, personnel and facilities spectrum. The cell is not flashy; it cannot shoot down a Scud missile, a mortar or an aircraft. The air defense and airspace management cell is more subtle, and it is making a difference in the current fight every day. Let's make sure we're giving our full support to preparing Soldiers assigned to the air defense and airspace management cell properly.

Captain Petrus J. Engelbrecht, air defense artillery, is the air defense observer/trainer at the Battle Command Training Program, Operations Group Charlie at Fort Leavenworth, Kan. Previously, he served as the commander of C Battery, 5th Battalion, 5th Air Defense Artillery, Fort Lewis, Wash., which conducted Counter-Rocket, Artillery and Mortar sense and warn in support of Operation Iraqi Freedom. He also served as an Avenger platoon leader and later executive officer of D Battery, 4th Battalion, 5th Air Defense Artillery, at Fort Hood, Texas, deploying in support of Operation Iraqi Freedom II.

Hellraisers work integration and joint operations

A C-RAM system in Iraq. (Photo by SrA Brittany Bateman, U.S. Air Force)

By CPT Kristopher S. Perrin

Headquarters and Headquarters Battery, 5th Battalion, 5th Air Defense Artillery, *Hellraisers*, stationed at Fort Lewis, Wash., just completed its command post exercise and mission readiness exercise at Fort Sill, Okla. The *Hellraisers*, proud members of the 31st Air Defense Artillery Brigade, Fort Sill, will deploy in the first quarter of 2010 and provide Multi-National Division-Baghdad with Counter-Rocket, Artillery and Mortar capabilities. Conducted at Fort Sill, this was HHB/5-5 ADA's culminating collective training event before its upcoming Operation Iraqi Freedom deployment. Every unit undergoes a command post exercise and mission readiness exercise before a deployment, but our training was unique in two ways. The training prepared the *Hellraisers* for integration between two branches of the Army and also for joint operations with the U.S. Navy.

C-RAM. C-RAM is an easy concept to comprehend. It is a system of systems built on six pillars: sense, warn, intercept, shape, respond and protect. We sense incoming rounds with our radars. The radars provide a point of impact that enables a wireless audiovisual warning system to warn certain forward operating base sectors of incoming rockets, artillery and mortars. A Land-based Phalanx Weapon System can intercept these incoming rounds if they are projected to land in a gun defended asset.

We shape the battlefield by knowing where the enemy indirect fire is originating and recommend increased patrols in the area. We facilitate response by providing actionable-intelligence, such as a point of origin, to the maneuver commander for counterattack purposes. Lastly, we protect by understanding our system's weaknesses and continually improving our defensive posture. C-RAM is a young system that requires a joint effort and combined between air defense artillery, field artillery and the U.S. Navy.

Radars. The extraordinary efforts to integrate the air defense artillery and field artillery branches seem to be coming to fruition. This is evident by the demands of our upcoming deployment. The *Hellraisers* received training on the Q-36 and Q-37 Firefinder radars and will depend heavily on them to provide effective localized warning and intercept capabilities in Multi-National Division-Baghdad.

These field artillery radars will be operated and maintained by a field artillery unit. The air picture they produce will be fed into a forward area air defense computer that uses different algorithms to determine if the system needs to intercept the round or allow the round to impact. Either way, the audiovisual warning system will provide localized early warning of all incoming rounds. C-RAM seems to be the first capability that requires both air defense artillery and field artillery support. The Fires Center of Excellence at Fort Sill seems to be less of a concept and more of a reality.

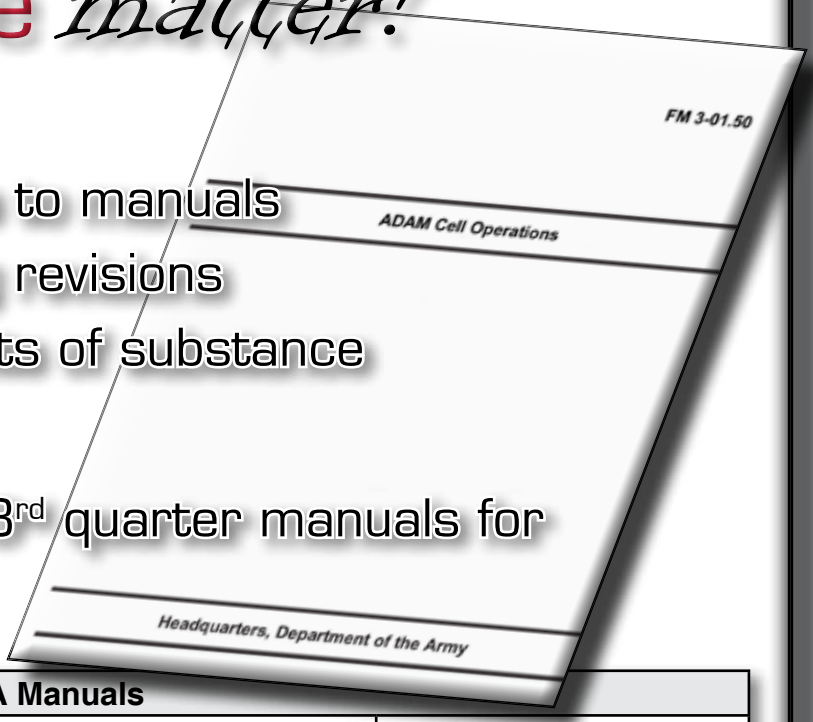
The mission. The *Hellraisers'* mission requires them to work not only with field artillery capabilities, but with the U.S. Navy as well. When the *Hellraisers* got off their flight at Fort Sill, they were greeted by their Navy counterparts who will accompany them on their 12-month deployment. A total of 58 Soldiers and 71 sailors trained together for 336 straight hours to certify as a C-RAM joint intercept battery.

The sailors' primary mission is to operate and maintain the 20-mm Land-based Phalanx Weapon System. This system enables the unit to intercept incoming rounds. Upon completion of the command post exercise and mission readiness exercise, the *Hellraisers,* Soldiers and sailors traveled back to Fort Lewis to take block leave and continued training for the deployment. Currently, the *Hellraisers* are now deployed to Victory Base Complex in Baghdad, Iraq where they have just assumed their C-RAM mission.

Hellraisers can work jointly and integrate their work. They are on the cutting edge of a modular force that requires a unit and its members to be flexible and adaptive.

Captain Kristopher S. Perrin, air defense artillery, is the commander of Headquarters and Headquarters Battery, 5th Battalion, 5th Air Defense Artillery at Fort Lewis, Wash. Previously, he served as an S3 battle captain in 4-5 ADA, as an executive officer for E/4-5 ADA, and platoon leader for E/4-5 ADA while stationed in Fort Hood, Texas. He holds a Master of Art in leadership studies from the University of Texas in El Paso. He also holds a Bachelor of Science in Human and Regional Geography from the United States Military Academy in West Point, N.Y.

Your thoughts on field artillery and air defense artillery doctrine *matter!*



How?

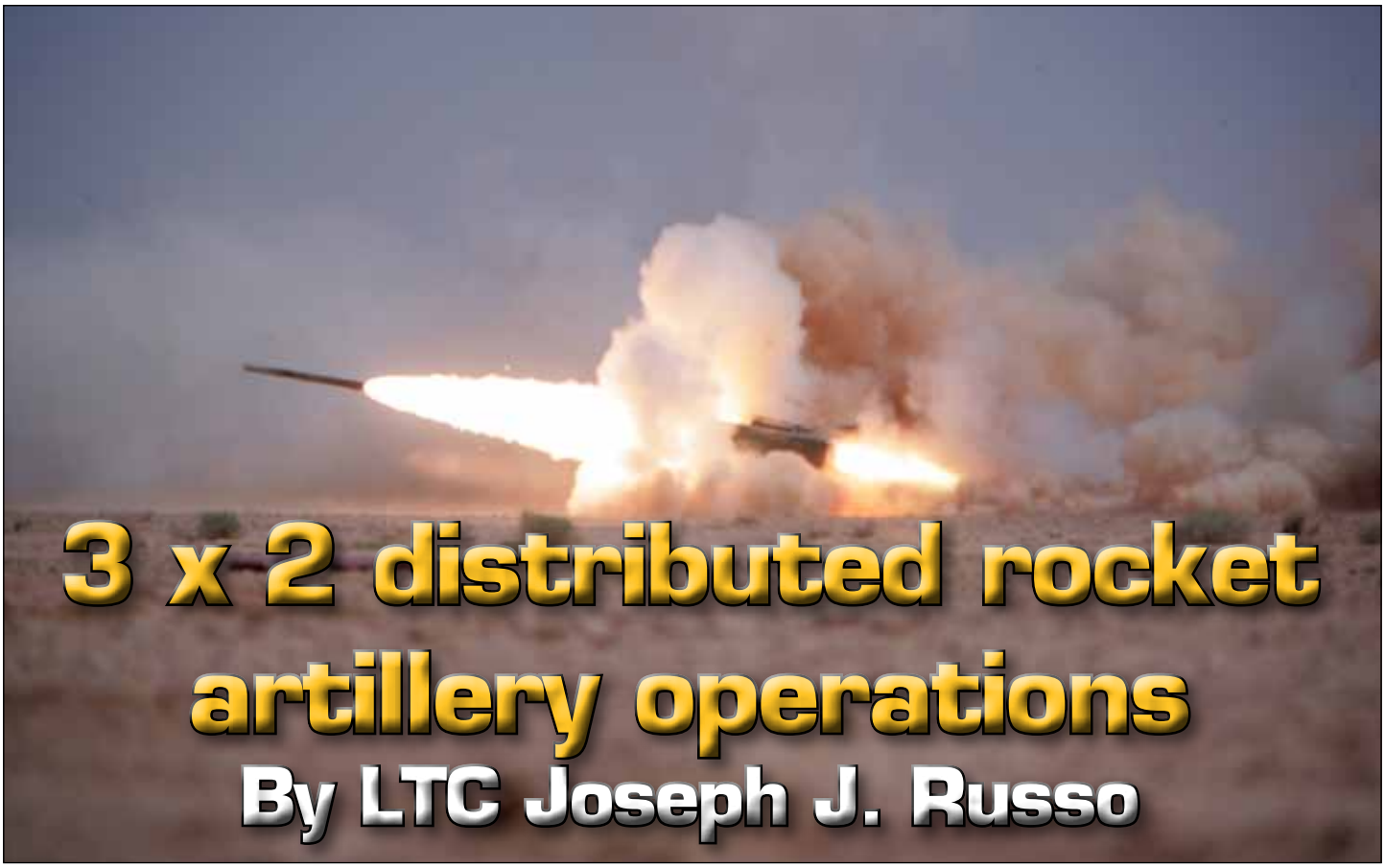
- Suggest improvements to manuals
- Review manuals during revisions
- Respond with comments of substance

When?

- Fiscal year 2010 2nd/3rd quarter manuals for review/comments

ADA Manuals		
FM/ATTP/TC	***Name***	***Document location and forums for comment***
FM 3-01.50	ADAM Cell Operations	Fires Knowledge Network
FM 3-01.64	Avenger Battalion and Battery Operations	Fires Knowledge Network, AKO
FA Manuals		
FM/ATTP/TC	***Name***	***Document location and forums for comment***
FM 3-09	Fire Support (Revised Final Draft version 3 – March)	Fires Knowledge Network, AKO
FM 3-60	The Targeting Process (Final Draft – April)	Fires Knowledge Network, AKO
ATTP 3-09.30	Observed Fire (Initial Draft - April)	Fires Knowledge Network, AKO
ATTP 3-09.50	The Cannon Fires Battery (Initial Draft – April)	Fires Knowledge Network, AKO
ATTP 3-09.65	NLOS-LS Operations (Initial Draft – April)	Fires Knowledge Network, AKO
TC 3-09.31	Fire Support Training for the BCT Commander (Initial Draft – April)	Fires Knowledge Network, AKO

- Email Fires Center of Excellence Doctrine at ATFS-DDD@conus.army.mil
- General comments can be made on the Doctrine Blog at: http://usacac.army.mil/blog/blogs/firesdotd/default.aspx



3 x 2 distributed rocket artillery operations

By LTC Joseph J. Russo

A High-Mobility Artillery Rocket System from T Battery, 5th Battalion, 11th Marines, launches a reduced range practice rocket from the unit's range at Al Asad Air Base in Anbar province, Iraq, June 28, 2008. (Photo by LCpl Kelly Chase, U.S. Marine Corps)

"Any use of force generates a series of reactions. There may be times when overwhelming effort is necessary to destroy or intimidate an opponent and reassure the populace. An operation that kills five insurgents is counterproductive if collateral damage leads to the recruitment of 50 more insurgents."

Marine Corps Warfighting Publication 3-33.5 Counterinsurgency Operations

As U.S. and coalition forces enter their ninth year of combat in Afghanistan, the current operating environment reflects a complex mix of both kinetic operations and unique counter-insurgency considerations. Fires must be arrayed to enable the mobility and responsiveness of mortars, the massing effects of cannon artillery on enemy concentrations and air- and ground-delivered precision fires on high value targets, time sensitive targets and targets requiring low collateral damage. As the protection of the population and sensitivities toward civilian casualties become center-pieces to counter-insurgency operations in Operation Enduring Freedom, the ability to assess requirements appropriately and effectively, position and employ assets is critical to the success of this dynamic three-block fight. The M142 High-Mobility Artillery Rocket System brings a revolutionary range and precision fires capability to both Operation Enduring Freedom and Marine artillery arsenal in general.

In May 2008, 5th Battalion, 11th Marine Regiment, successfully completed its new equipment transition from the M198 medium towed howitzer to M142 HIMARS. While physically fielded, trained and capable of employing the new system and its associated equipment, employment concepts arguably remained entrenched in legacy cannon tactics, techniques and procedures.

Examining existing U.S. Army Multiple-Launch Rocket System doctrine, Army, Marine Corps and British HIMARS employment lessons learned from Operation Enduring Freedom and possible future contingencies across the range of military operations, 5th Battalion, 11th Marine Regiment, adjusted its training and organizational structure to support the requirements of decentralized command, control and sustainment of its subordinate batteries. From June through August 2009, 5/11 Marines conducted a series of command post and live-fire exercises to assess and validate decentralized, precision rocket fires in a highly distributed operating environment.

Battalion-level distributed operations July 27 to July 29, 2009. The battalion dispersed its batteries between Camp Pendleton, Calif., Marine Corps Air Station Miramar, Calif., and Naval Weapons Station Seal Beach, Calif. Initially focused on the validation of long range tactical satellite and high-frequency communications, these exercises matured to the level of live-fire execution over an operating area in excess of 150 miles.

Upon completion of these exercises, firing battery commanders were directed to reorganize their units into three firing platoons of two launchers per platoon (designated 3 x 2), and a general assessment and validation of personnel and equipment requirements was undertaken across the battalion.

Platoon-level distributed operations Oct. 14, 2009 to Nov. 1, 2009. 5/11 Marines' platoons operated from five separate locations at Camp Pendleton, Marine Corps Air Ground Combat Center Twentynine Palms, Calif., Marine Corps Air Station Miramar,

Marine Corps Air Station Yuma, Ariz., and the Naval Shore Bombardment Training Area at San Clemente Island, Calif. Rocket artillery liaison teams were employed with Marine Expeditionary Forces Fires, 1st and 5th Marine Regiments.

During this assessment, 5/11's Headquarters Battery was reorganized and distributed in support of independent firing battery operations. Administrative and logistics capabilities were task organized into direct support teams, providing platoon-level units with the necessary support functions to operate semi-independently throughout geographically dispersed locations. The battalion combat operations center was reorganized to replicate a 24-hour Marine air-ground task force-level fires cell. The replicated fires cell, operating from the I Marine Expeditionary Forces Battle Simulation Center at Camp Del Mar, was capable of both voice and digital long-range communications through a tactical satellite and other high frequency systems, and exercised control of both the command post exercise and live-fire operations of the battalion's deployed platoons, distributed across nearly 500 miles. It further conducted a long-range command post exercise with 2nd Battalion, 14th Marines (Reserve HIMARS battalion), in Grand Prairie, Texas. This training culminated during the division's Steel Knight 09 exercise with the live firing of 12 rockets at Marine Corps Air Ground Combat Center Twentynine Palms by a two-launcher platoon, which was controlled by the I Marine Expeditionary Forces fires rocket artillery liaison team within the fires cell at Camp Pendleton. The battalion headquarters' role transitioned from command, control and sustainment of battalion-level operations to dispersed, task organized support of platoon operations and facilitation of distributed training.

Introduction and employment of rocket artillery liaison teams. Marketing the M142 HIMARS' capabilities to supported maneuver commanders was among the greatest challenges initially faced with its fielding. Now capable of providing deep, precision fires, previously only delivered by air platforms, HIMARS provides a dramatically increased fires capability and options to the Marine air-ground task force. Recognizing the need to provide rocket expertise, mission processing facilitation and long-range communications capabilities validated in the battalion's command post exercises and field exercises, 5/11 Marines reorganized its liaison personnel into four-man rocket artillery liaison teams. Their training focused on the capabilities listed in figure 1. Constructed to provide flexible rocket mission processing expertise, application of a rocket artillery liaison team at the appropriate force fires coordination center or fire support coordination center is deemed essential to facilitate timely and effective rocket fires integration.

Long-range communications. Having identified the requirement for sustained, long-range voice and digital communications, the allocation of secure tactical satellite and high frequency communications was assessed as operationally critical. The allocation of dedicated satellite time, bandwidth, frequencies and appropriate equipment must be viewed as a necessity to harness and integrate the capabilities of this weapon system fully. Simply put, the autonomy and complexity of the newly developed long-range communications infrastructure and distributed operations concept entail a need for augmented communications equipment, prioritization, supervisors and operators. A table of organization and equipment change request, identifying an additional 45 Marines, representing key supervisory and military occupational specialty critical billets, an additional technical representative and a suite of long-range communications equipment has been submitted to address these requirements.

Strategic lift and ground convoy raid capability. In each of its battalion-level exercises, 5/11 Marines conducted fly away training and embarkation preparation for raid employment by both C-130 and C-17 aircraft platforms. Establishing a strong working relationship with the C-130 squadron Marine Aircraft Group-11 Marine Corps Air Station Miramar, these aircraft raids have included movements to the expeditionary airfields at Marine Corps Air Ground Combat Center Twentynine Palms and San Clemente Island, as well as the airfield at Marine Corps Air Station Yuma. The significant range capabilities of the system require minimal movement of the launchers to range targets throughout an area of operations. As such, numerous established and expeditionary airfields throughout an area of operations potentially offer adequate, secured position areas from which to provide coverage of all contingencies. Additionally, each 5/11 Marines' platoon has conducted considerable training on ground convoy/improvised explosive device defeat movements to support off forward operating base/camp vehicular raids and movements. To conduct raids, either by air or ground, and while mission, enemy, terrain and weather, troops and support dependent, augmentation of the raid unit by non-organic security must be considered based on the operating environment.

A truck prepares for a dry-fire session to test the firing capabilities of the High-Mobility Artillery Rocket System, Dec. 6, 2007. (Photo by Cpl Andrew Kalwitz, U.S. Marine Corps)

Resupply operations. The current HIMARS battery table of equipment allocates 12 resupply supply systems.

Figure 1: Rocket artillery liaison team training focuses on the following capabilities:

Comprised of a resupply vehicle with organic hydraulic crane capability and a towed resupply trailer, each resupply supply system is capable of transporting as many as four rocket pods, each carrying six rockets or one Army Tactical Mission System missile per pod. Each launcher is supported by two resupply systems capable of transporting a total of eight pods. The launcher transports a ninth pod. In extraneous conditions, pods can be double stacked to double the lift capacity. The battalion also has developed medium tactical vehicle replacement/logistics vehicle system bed "kits". These kits are intended to modify medium tactical vehicle replacement/logistics vehicle system truck beds with pod "shoes" to enable the transportation of rocket pods.

Training has been conducted with the Marine Logistics Group to enhance battery-level organic helicopter support team capability to load and offload heliborne, sling loaded resupply operations. Each battery will maintain a helicopter support team-trained capability at each of its three distributed platoons. Further, it has been determined through the spring and summer exercises and assessments that, as the artillery regimental logistics trains typically are focused forward in support of its cannon battalions, it is likely they will be separated by significant and arguably unsupportable distances from HIMARS units. The Marine Logistics Group or designated combat logistics battalion, therefore, would best be suited with the requirement to resupply rocket ammunition. Marine Logistics Group familiarization training regarding rocket ammunition handling and resupply operations is planned within the battalion's fiscal year 2010 training schedule.

Conduct of HIMARS 3 x 2 operations. Recognizing the range and fire power of the HIMARS battery and assessing requirements in support of current and future operations, the ability to operate HIMARS as 3 x 2 formation was found to be sound operationally. To adequately man a HIMARS firing battery for sustained 3 x 2 operations, the current table of organization and staffing goal were assessed as inadequate to provide sufficient supervision in several key billets. Supervisory billets such as platoon commander, fire direction officer and operations chief positions require the augmentation of additional Military Occupational Specialties 0802 Field Artillery Officers and 0848 Field Artillery Operations Chiefs. Additional communications infrastructure requires enhanced radio operator and technician augmentation as well.

As HIMARS tactics, techniques and procedures continue to develop, the range and precision capabilities of rockets in the Marine artillery arsenal must be understood. HIMARS should not be viewed simply as a long range cannon. Rather, the system should be viewed as a long range, precision fires platform. While HIMARS can and should respond to close fight maneuver requirements, its worth on the battlefield must additionally be felt in its range and precision capabilities. Target types should be such that a low collateral damage estimate, Global Positioning System-

guided, high-explosive unitary munitions are the effect of choice. The penetrating effects of its vertical angle of fall and delay fuse capabilities make it uniquely capable of destroying reinforced mud/brick positions while producing minimal collateral damage to surrounding structures.

Future initiatives. There are several future initiatives to orient and train maneuver units on HIMARS and its employment.

Mojave Viper integration. Mojave Viper exercises offer a superb venue to orient and train maneuver units throughout the Marine Corps. With the establishment of the rocket artillery liaison team concept, the entry argument for access to rocket fires is established. When fully trained, the rocket artillery liaison team provides both mission processing tactics, techniques and procedures, as well as professional military education on capabilities and logistical requirements.

MARSOC/ANGLICO/NSW Training Integration. Having developed relationships with each organization, the continued integration of Marine Special Operations Command, Naval Special Warfare and air naval gunfire liaison company sensors to distributed operations is deemed essential. Furthermore, the integration of the unmanned aerial systems as a viable rocket observation platform requires development.

Development of distributed operating areas. While working to develop viable rocket artillery firing areas further aboard Camp Pendleton and San Clemente Island, future exercises will include long-range raids and command post exercise training from Naval Air Station, El Centro, Marine Corps Air Station Miramar, Marine Corps Air Station Yuma, Naval Weapons Station Seal Beach, Naval Training Center at Warner Springs, the U.S. Army Reserve Center at Camp Roberts, Nellis Air Force Base, and the expeditionary airfield at Imperial Beach. To truly demonstrate the system's capabilities, live-fire Guided Multiple-Launch Rocket System exercises also must be enabled. See figure 2 for some additional initiatives.

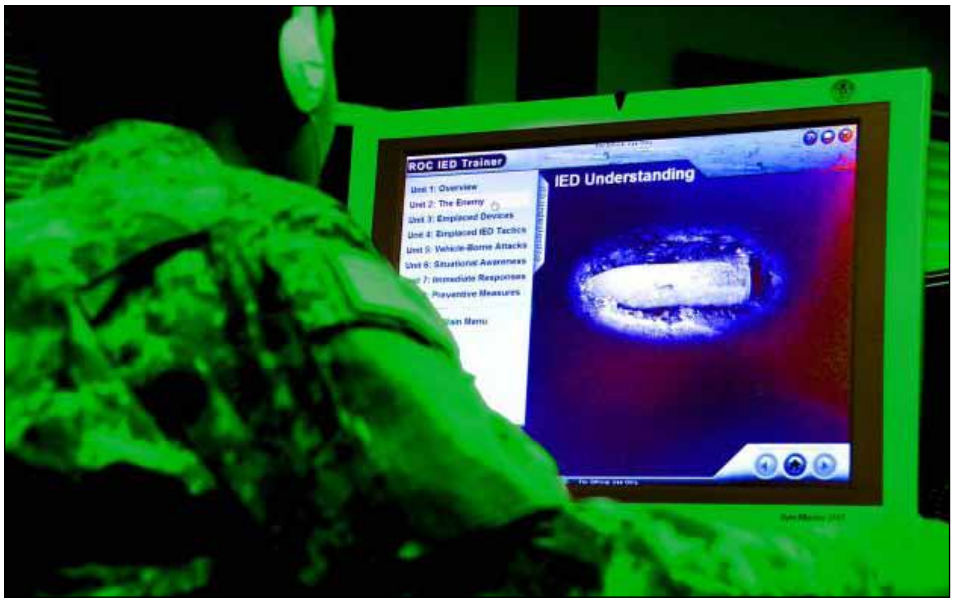
Revolutionary in its capabilities, the M142 HIMARS brings a level of range and precision lethality never before seen in the Marine artillery arsenal. As with so many newly developed systems, interest in HIMARS has grown as its capabilities have been demonstrated in both peace-time training and in combat. With the resources, advocacy and training integration necessary to employ HIMARS effectively, innovative development will continue to maximize its worth across the full spectrum of conflict.

Lieutenant Colonel Joseph J. Russo is the commander of 5th Battalion, 11th Marine Regiment in Camp Pendleton, Calif. In January of 2003, he deployed with the 1st Battalion, 11th Marines, 1st Marine Division as part of Amphibious Task Force West, participating in combat operations with RCT-1 in support of Operation Iraqi Freedom I. He then attended the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas, subsequently serving as the U.S. Marine Corps fire support exchange officer with the U.S. Army's 25th Infantry Division (Light), Schofield Barracks, Hawaii. While with 25th ID, he deployed to Afghanistan in support of Operation Enduring Freedom V. In July 2006, he reported to the Recruit Training Regiment, MCRD San Diego, with subsequent assignments as the battalion executive officer, 3rd Recruit Training Battalion, regimental operations officer, and regimental executive officer, Recruit Training Regiment.

Figure 2: Live-fire Guided Multiple-Launch Rocket System exercises must also be enabled. Additional initiatives include the following:

IED trainer helps prepare warfighters for Afghanistan

By William J. Sharp
Headquarters Army
Directorate of Operations



Afghanistan-bound Soldiers and service members can use the "Recognition of Combatants-Improvised Explosive Devices" computer-based interactive multimedia trainer to help prepare for deployment. The program helps train warfighters to anticipate and prevent IED-related incidents in theater. (Photo illustration by C. Todd Lopez)

As of February, Afghanistan-bound Soldiers and service members can access "ROC"-solid training to help counter improvised explosive device threats.

Recognition of Combatants-Improvised Explosive Devices, or ROC-IED for short, is a computer-based interactive multimedia trainer. The program helps train warfighters to anticipate and prevent IED-related incidents in theater. Officials distributed more than 30,000 CD copies of an Iraq-focused program. Based on its success and demand, officials determined the need for an Afghanistan version.

"ROC - IED is a high quality contribution to the safety, survivability, and lethality of our dedicated and selfless warfighters working in defense of our nation," said Brigadier General Ernest C. Audino, deputy director, Army operations, readiness and mobilization directorate (G-3/5/7).

The program is divided into three main topical areas: IED understanding, thermal understanding, and the IED visible/thermal browsing library. A trainee can select Iraq or Afghan-centric modules.

The IED understanding section begins with an IED overview followed by the Afghan operational environment to include types of emplaced devices; IED emplacement tactics; vehicle- and person-borne IED attacks; situational awareness; immediate responses; and preventive measures.

Differences between visible and thermal imagery, factors that affect thermal images, and techniques to optimize thermal images are discussed in the thermal understanding section.

The thermal browsing library helps train users on capabilities and limitations of sensor solutions. The library contains numerous images of personnel wearing a variety of suicide bomb devices. Additionally, ROC-IED's ask-the-instructor feature allows students to pose questions to various IED subject matter experts.

One of the program's many benefits is its versatility and flexibility.

"The software uses actual footage from insurgent and coalition-produced video which helps demonstrate lessons learned from both operational theaters," said Ken Cook, Recognition of Combatants Team member and one of the software's developers at Fort Belvoir, Va.

Additionally, "ROC-IED can be used alone as introductory level, self-paced counter-IED knowledge training, as a supplement to classroom and lane training, or as long-term sustainment training," Cook said. "ROC-IED is regularly evaluated and upgraded to address the ever-changing conditions in theater."

Organizations collaborating on ROC-IED development focused on emerging warfighter needs.

"You almost have to unlearn Iraq counter-IED strategy when approaching the Afghan theater," Cook said. "That's because terrain, tactics, types of devices, and the Afghanistan insurgency are considerably different from Iraq. So, in creating the program, we wanted to make sure the training is geared toward the new and different environment."

The training tool is available to U.S. government agencies and their designated contractors. The Army has also initiated a foreign disclosure process on ROC-IED in order to make it accessible to NATO and International Security Assistance Force partner nations. Product requests or questions can be sent to roc@nvl.army.mil. The program is web accessible at https://rocv.army.mil.

Editor's note: *This article has been edited for Fires' style and format.*

"The software uses actual footage from insurgent and coalition-produced video which helps demonstrate lessons learned from both operational theaters..."

LCMR: *Not just* an additional duty

By MAJ Benjamin R. Luper and CW4 Dallas C. Whitney

CW4 Dallas Whitney (left) and MAJ Ben Luper, both of Combined Joint Task Force-82 Joint Fires Cell, stand next to an AN/TPQ-48v2 Lightweight Countermortar Radar at an undisclosed location in January. (Photo by Capt. Bernie King, U.S. Air Force)

Since fielding in 2003, the AN/TPQ-48 Lightweight Countermortar Radar has provided the joint force with an invaluable 6,400 mil countermortar acquisition capability that is essential in counter-insurgency operations. In an operating environment where units, sometimes as small as platoons, operate from remote combat outposts and forward operating bases, the LCMR is often the only counterfire target acquisition system available. Unlike its radar cousins, the Q-36 or Q-37 Firefinder radars, the LCMR was not fielded with an LCMR operator military occupational skill or modified table of organization and equipment section.

According to *Field Manual 3-09.23 Tactics, Techniques and Procedures for the Modular Fires Battalion* Draft Version 2 dated May 8, 2009, "Target acquisition platoons are organized with a platoon headquarters, a Q-36 radar section and Q-48 lightweight countermortar radars. In addition, the heavy brigade combat team and Stryker brigade combat team fires battalion have a Q-37 radar section." Note the lack of an allocated section for the LCMR. This has led to considerable shortcomings in proper emplacement, operation and maintenance that have reduced the LCMR's overall effectiveness.

Manning burden. The lack of dedicated personnel is exasperated further by the exceptional requirement for LCMR coverage in Afghanistan. Even if the Army had decided to create an LCMR operator military occupational specialty, the current demand far exceeds the brigade combat team modified table of organization and equipment allocation of four LCMRs. For example, Combined Joint Task Force 82 operates more than 50 LCMRs throughout Regional Command–East. The decision to field the LCMR without a modified table of organization and equipment section or MOS has placed the manning burden onto the brigade combat team. While already stretched thin, brigade combat teams now must generate *ad hoc* LCMR sections from non-radar and more often non-artillery personnel.

While it is unrealistic to consider manning the LCMR with 13R Radar Operators, the LCMR does require fully trained and certified operators and dedicated sections to employ, operate and maintain the radar effectively. An unintended consequence of the Army's decision not to provide the LCMR with an modified table of organization and equipment section or MOS personnel is the perception that the LCMR requires little more than the operator to power-up and monitor the radar passively. By treating the LCMR as an additional duty, much like conducting dining facility headcount, and employing rotating or part-time sections, the LCMR's ability to provide a counterfire acquisition and force protection capability is reduced significantly if not lost altogether.

The LCMR requires trained, certified and permanently manned sections to achieve its full operating capability, just as any weapon system or command and control application. The lack of expertise and dedicated manpower has created a habit and, more often, a necessity for operators and fires staffs to forward problems and issues — many of which entail 10- to 20-level maintenance, employment and basic operator-level troubleshooting directly to civilian field service representatives.

Frequent issues. The most common errors associated with the employing the LCMR stem from the lack of adequate planning and understanding of the LCMR's capabilities and limitations. Operators frequently assume that because the LCMR has a 6,400 mil acquisition capability, location considerations are minimal. Leaders must take the LCMR's operational requirements into account in their forward operating base/combat outpost defensive plans with the same emphasis provided to the Firefinder radars, howitzers, mortars and direct fire weapons systems. Placing the LCMR on the highest point or building on a forward operating base often surrounded by numerous radio antennae is not always the optimal location for the radar.

Detailed assessment. The target acquisition platoon leader, fire support officer, fire support NCO and S2 intelligence officer must conduct a detailed assessment of enemy indirect fire capabilities and template or historic firing locations. By understanding

the enemy's indirect fire system's ballistic and trajectory characteristics and tactics, techniques and procedures, planners can apply this data to calculate the optimal placement for the LCMR to acquire enemy indirect fire. The pivotal factor of whether or not the radar acquires the projectile is the amount of time the projectile is within the radar search beam. The enemy indirect fire time of flight must not be confused with the LCMR's track time requirements.

Applying proper employment planning fundamentals in conjunction with current intelligence assessments is only the first step in achieving successful LCMR acquisitions. By estimating the trajectory's maximum ordinate and the round's entry point into the radar beams, planners can calculate the required radar track time. This calculation results in an optimal "goose egg" location for the radar. The challenge in Afghanistan, as well as any environment that operates from company-sized forward operating bases, is the goose egg may fall outside the physical confines of the forward operating base. However, this does not alleviate the requirement or value of performing this calculation.

Essential considerations. Accurate radar location and boresight azimuth of the radar are essential for accurate enemy indirect fire acquisitions. If the radar does not have an accurate location and orientation direction, its ability to calculate the acquisition grid location within 100 meters is limited tremendously. For example, during a polar fire mission, if a fire direction center has an inaccurate grid for a forward observer and the forward observer provides an inaccurate azimuth to the target, the computed target location is inherently inaccurate. The use of survey teams for positioning and emplacement is preferred, however at a minimum the use of an AN/PSN-13A Defense Advanced Global Positioning System Receiver and a precision mapping software tool, such as Falcon View, is sufficient. Unlike indirect fire systems, a five meter error in radar location does not translate into a point of origin location error of five meters. An acquisition at a range of five kilometers with an LCMR with a five meter positioning to bore-sighting error will produce a 250 meter target location error.

Once the LCMR is located and emplaced properly, the radar requires a proficient operator to initialize the LCMR radar software, operate Falcon View, the geographic translator and the advanced communication service applications, input the mission planning data and establish interoperability with the LCMR Remote. Additionally the operator must initialize the Personal Data Assistant, Advanced Field Artillery Tactical Data System and Counter-Rockets, Artillery and Mortar systems, as required. Operators must understand the system's operational capabilities, have proficiency in uploading mission data into the system's computer, maintain proper monitoring of the systems clutter display and acquisition tracks and establish interoperability with others systems. While this may seem like a lot, the LCMR radar software is not overly difficult to operate. Much like any computer application, training, repetition and experience are essential.

Daily operator maintenance is also essential for optimal performance. The LCMR requires operators to conduct daily preventive maintenance checks and services same as any other item of equipment. Daily maintenance includes, but is not limited to, checking the cylinder for proper power connection, cleaning the cover and the 24 antenna columns, checking antenna column connections, properly powering down the radar and Miltope computer system for a short periods of time, re-leveling the radar and re-orienting the radar onto its bore sighting point. Operational readiness reporting in Afghanistan shows that units that conduct these daily maintenance activities have better operational readiness rates and significantly more accurate acquisitions.

Deploying units must identify, assign, train and certify personnel on the LCMR before deployment. Setting up the radar on an observation post during live-fire exercises is an excellent way for operators to gain experience and validate their training on the LCMR. Once deployed, the assigned personnel must stay on the systems and receive further sustainment training throughout the deployment. Understandably, the need to rotate personal may arise. However, leaders must understand the level of training and experience required to achieve full operating capability of the LCMR.

As artilleryman, we are duty bound by the mission of field artillery, "To integrate all fire support assets into combined arms operations." The Q-48 LCMR is one of those assets. For a system that will provide you with an eight-digit grid location within 100 meters from where the enemy is engaging you with lethal indirect fires, it is surprising to see the marginal effort across all maneuver, fires and effects branches that is spent toward the LCMR's employment and operation. While it is unrealistic, given the operating environment, that artillerymen are present everywhere an LCMR is employed, it is not outside our capacity to provide oversight and leadership for its employment, operation and maintenance.

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Chief Warrant Officer Four Dallas C. Whitney, field artillery, is the Combined Joint Task Force -82 Force fires officer and sensor manager in Afghanistan. He previously commanded F Target Acquisition Battery, 210th Fires Brigade, 2nd Infantry Division, Republic of Korea. He has 20 years of service as a Military Occupational Specialty 0803 Target Acquisition Officer in the U.S. Marine Corps before an inter-service transfer to the U.S. Army.

"Deploying units must identify, assign, train and certify personnel on the LCMR before deployment. Setting up the radar on an observation post during live-fire exercises is an excellent way for operators to gain experience and validate their training on the LCMR."

The Giraffe:
The multi-mission radar gets it all done

The Giraffe agile multi-beam air defense search radar at a demonstration at an undisclosed location in the United States. (Photo courtesy of Saab)

By CPT John M. Williams II

Today's operating environment has created a new type of Soldier. From the lowest levels to the highest echelons, more is being asked of each individual in today's fight. An infantry private has to know much more than just how to conduct his warrior tasks and battle drills; he has to know how to be a forward observer, a human intelligence source, a combat medic and civilian affairs agent. This concept of the decathlete warrior is a result of increasing requirements and decreasing resources within the military, meaning there is more to do and less to do it with. For the military to keep pace, more must be asked from the resources we have. This concept's truth goes beyond the Soldier and encompasses all of our military equipment as well. There may be no better example of a decathlete system than the Giraffe agile multi-beam air defense search radar.

Challenges. Historically, radars were specialized and used for individual and specific mission sets. Multiple radars would be employed within a small area with limited interoperability and a constant concern of interference. Each system required its own specified operators, maintainers, logistical support packages and technical requirements, all of which represent costly resources. We see this paradigm being executed today in our current theaters. Because of the asymmetric, nontraditional area of operations, multiple units occupy the same space, each attempting to maintain 360-degree radar coverage, and because of a lack of interoperability, the units do not get to leverage their neighboring unit's assets fully.

The Counter-Rocket, Artillery and Mortar fight may be the best example of this flawed system. Counter-Rocket, Artillery and Mortar requires a mixture of long-range counterfire radars, short-range counter-indirect fire radars and low-level airspace management radars to create a composite 360-degree bubble of persistent surveillance, all in a small and sometimes urban area. After this feat is accomplished, the challenge becomes sharing this architecture with the rest of the force. To move forward, we must consolidate these requirements, limit the resources dedicated to them and ensure all systems are interoperable to allow units to leverage the assets available.

Key features. The ideal decathlete sensor would have to be self contained and highly mobile, unlike current systems that require separate power supplies, shelters, vehicles and very specific sites to emplace. The system's range should extend beyond the limits of the threat, and its search fan would have to be 360 degrees to remain relevant in today's asymmetric, nontraditional area of operations. The system would have to be able to accomplish the missions of today's counterfire radars, both short and long range, as well as airspace management radars. The system would have to be interoperable across a long distance, allowing netted sensor coverage throughout the area of operations. It should be ruggedized and able to operate in austere environments. It should be elevated to operate in urban environments with limited masking from man-made structures.

"While no radar is infallible, this system rarely misses a target. The future of radar systems in the operational environment is unclear, however if the Giraffe is any indication, that future is bright."

Enter the Giraffe. It appears to have been designed to meet these requirements to a tee. The system is self-contained in a 20-feet container mounted on a cross-country truck for high mobility and rapid deployment. Its emplacement is complete within 10 minutes and march order is complete in five minutes. It can track air breathing targets simultaneously out to 120 kilometers in range and 20,000 meters in altitude, and ballistic tracks more than 20 kilometers in range. The radar is refreshed once a second and can be equipped with a number of discriminators to include friendly or foe identified, automatic threat evaluation and recognized air picture. It uses C-band radar with ultra low side-lobes. This is critical to reduce the amount of interference it causes in a radio frequency spectrum already saturated with systems in the current operating environment. The system can be operated and maintained by a single Soldier, or a small team can operate and maintain a cluster of radars. One of the best features is the interoperability the system has with other systems. The radar can operate independently or in a cluster, creating a netted air-ground picture across a wide area.

Current employment. While the system seems too good to be true, we have yet to apply all of its uses fully. To date, only four systems are in use in the current operational environment (two by the U.S. and two by the United Kingdom, all in Counter-Rocket, Artillery and Mortar architectures). The United Kingdom has leveraged the system's multi-mission capabilities in their operations already. The Counter-Rocket, Artillery and Mortar architecture has been where the Giraffe has made its greatest impact.

Statistically, Giraffes have the fewest target misclassifications and the most accurate state vector messages, which are key elements to successful Counter-Rocket, Artillery and Mortar operations. During the United Kingdom's Counter-Rocket, Artillery and Mortar mission readiness exercises at McGregor Range, Fort Bliss, Texas, the Giraffe was consistent in quickly acquiring 2.75-inch rockets while tracking remote control air targets. Because it is equipped with its own Global Positioning System and north finding systems, its computations are less susceptible to human errors in mission planning. While no radar is infallible, this system rarely misses a target.

The future of radar systems in the operational environment is unclear, however if the Giraffe is any indication, that future is bright. This system has the potential to accomplish the functions of the Q-36 Firefinder radar, the Q-48 lightweight counter mortar radar and the Q-64 Sentinel radar with considerably less support needed, a less cluttered radio frequency spectrum and, most importantly, drastically fewer Soldiers. With few limitations and almost limitless potential, the Giraffe is truly a decathlete sensor.

Captain John M. Williams II currently is the commander of Delta Battery, 2-6 Air Defense Artillery Battalion. In 2006, Williams was selected by his chain of command to command, train, and deploy the first C-RAM Sense and Warn detachment in support of Operation Iraqi Freedom. From June of 2006 to June 2007, this 55-Soldier detachment served in six forward operating bases across Iraq, and provided sense and warns capability to over 30,000 personnel.

Going Tribal:
Enlisting Afghanistan's tribes

By Dan Green

Kuchi villagers gather in Herat province, Afghanistan, to meet with a joint U.S. and Afghan team, Feb. 17, 2009. (Photos by LCDR John Gay, U.S. Navy)

"My duties were simple; I was to encourage the local inhabitants to stand up for themselves."

Alec Kirkbride (1971),
Former British officer and diplomat

As United States policy-makers undertake a series of exhaustive reviews of U.S. policies in Afghanistan, they are taking a closer look at Afghan tribes as part of a new strategy for confronting increasing violence.

Much of this newfound interest stems from the very successful turnaround of Anbar province, Iraq, where Arab tribes played a key part in changing the province from a hotbed of the Sunni Arab insurgency to a place where security has improved to the point that U.S. troops are beginning to be withdrawn. The tribes are also receiving increased attention because the U.S. does not have enough troops available to undertake a proper counter-insurgency campaign, because of existing requirements in Iraq and the dwell time required between deployments.

But as tribes assume a more central role in our Afghanistan strategy, it is essential that we approach the challenge informed by our experiences in Iraq, not dominated by them, and that we craft a pragmatic strategy that will achieve enduring security effects for the Afghan population. Afghanistan's tribes must forcefully confront the insurgency and not be overwhelmed by it, while maintaining the active support of the people and reducing the tendency of the tribes to fight among themselves.

All of this must be done while building the capacity of the Afghan state without creating a parallel tribal system. Though this would seem to be an almost insurmountable challenge, it is not impossible, and to quote General David Petraeus's view about creating security in Iraq: "Hard is not hopeless."

Any tribal-engagement strategy in Afghanistan that seeks to use the tribes against the insurgency must begin with an understanding of how the Afghan tribes are different from Iraqi tribes. Though Iraq's tribes were, to varying degrees, suppressed, co-opted, included and divided during Baathist rule, their structures remained largely intact. Even though tribal leadership in Iraq was often quite fluid, as rivals made competing claims based on different familial ties to a tribal atriarch, conflicts were generally circumscribed within a coherent tribal structure.

Many of Afghanistan's tribes have been systematically undermined by the Taliban, Pakistani intelligence and local warlords; perverted by the free flow of arms; and weakened by mass migrations of people. Leaders in power may not be the traditional tribal leaders, and some tribes have been so weakened that no single individual leads them. That situation complicates leader selection, legitimacy and efficacy and leads to conflict within and between tribes.

Because many tribes lack a unifying leader, a key aspect of a tribal engagement strategy should be the convening of tribal security *jirgas* (a meeting of village elders) throughout a province, primarily orchestrated by the government of the Independent Republic of Afghanistan, or GIROA. The goal of the jirga is to introduce the strategy of empowering the tribes and to identify not only a leader who can marshal the tribe or village against the insurgents but to also select a security committee. The chief goals of the committee are to advise the leader; assist in the selection, vetting and support of *lashgars* (tribal militias); and create a pool of potential replacements for the leader if he is ineffective, corrupt or killed.

These leaders would form the nucleus of a province-wide tribal force who would, in turn, select a provincial leader who could lead the tribes and take decisive action (in some cases, this may be an existing security official). This individual would, in turn, have a small executive committee to advise him and to help with security planning and the administration of salaries and other support.

Another key distinction between Iraqi and Afghan tribes is that most of Iraq's tribal leaders are well-educated, or at least have a modern outlook with respect to the way they run their affairs, and they are used to working within an established state structure. Many of Afghanistan's tribal leaders are illiterate, have limited administrative ability and often see very little reason to cede authority to the state or to other tribal leaders.

Furthermore, in Afghanistan, powerbrokers often struggle to control the few resources that do exist in the country, such as government revenue, land, roads and bazaars. There are no mitigating factors, such as oil profits, a robust state employment sector, a large private economy or an extensive road system facilitating commerce, to dampen tribal conflicts over resources.

For these reasons, an Afghan tribal-engagement strategy may have some natural limits in terms of how well indigenous forces are able to organize themselves. U.S. forces may encounter resistance from some tribes who either oppose an expansion of the state's authority or see an inclusive approach of empowering all tribes as unacceptable. Additionally, many tribes will be reluctant to diminish or eliminate their revenue streams (e.g., increasing transparency in government revenue as a way of reducing corruption or ceding control of a checkpoint to another force) and will have to be approached in a careful and deliberate manner that seeks to deconflict tribal friction points. Furthermore, because of the limited education of many tribal leaders, the U.S. will likely have to devote some resources to helping with the administrative tasks of tribal security, such as registering tribal members, administering salaries and facilitating other logistical support.

"Many of Afghanistan's tribes have been systematically undermined by the Taliban, Pakistani intelligence and local warlords; perverted by the free flow of arms; and weakened by mass migrations of people."

As effective as a tribal lashgar would be in confronting the insurgency, it must be nested within the institutions of the Afghan state. To ensure that local warlords are accountable to the people and the government, the tribal security leaders should be answerable to a provincial government committee comprised of the governor, the provincial council and the province's members of parliament. Each district chief would ostensibly lead his local committee of tribal elders, and the security committee would be led by the district police chief.

A provincial security committee, which would answer to the government committee, should be led by the Afghan National Police, or ANP, and have members from the National Directorate for Security, the Afghan National Army, or ANA, coalition forces and the heads of the tribal lashgars. To increase political legitimacy, access to the resources of the GIROA and support of the international community, the political leaders would set the tone for the lashgar, moderate disputes, build popular support, ensure government transparency and investigate abuses of authority (in conjunction with the judiciary and local mullahs)

While the security committee would have overall command of the tribal forces, it would work with other state security representatives to create the security plan for the province. The provincial security committee would be tasked with identifying the locations for checkpoints, facilitating the fortification of villages by allocating HESCO barriers, concertina wire and lumber; disbursing pay, ammunition and weapons; registering tribal members and issuing identification cards; and training lashgars while providing overall security direction.

Both the government and security committees would require staff that process payments, investigate problems, provide reports and facilitate the business of the committees. Following the Iraq model, each tribal member of the lashgar should be promised the opportunity to work for the ANP or the ANA if they perform their tasks well. The promise of future employment works as a check on bad behavior and will eventually serve as an employment magnet for military-age males who support the insurgency out of a need for income. Employment also provides a path for tribes to become legitimate members of the security force.

The role of coalition forces in the raising of tribal lashgars must be targeted, supportive and active. Throughout the process — tribal consultation, selecting leaders, standing up a security committee, creating a provincial government committee, adjudicating disputes and investigating abuses — the coalition must be present. We are often viewed as an honest broker and have the institutional capacity to make the ideas a reality. For example, in a tribe that does not have an identifiable leader, a CF member could facilitate a tribal meeting and work behind the scenes to achieve an understanding among rival candidates. Ideally, the GIROA would undertake this effort, but unfortunately, the GIROA is not viewed as an honest broker by many tribes, and in those instances, a CF member might have to intervene.

Additionally, if an investigation were undertaken by Afghan

Kuchi villagers gather in Herat province, Afghanistan, to meet with a joint U.S. and Afghan team, Feb. 17, 2009. (Photo by LCDR John Gay, U.S. Navy)

security and political representatives about claims of abuse, those men would have to travel to the area, convene an inquiry and then make the consequences of their investigation stick. At that point, friction can occur, particularly if a man has to be fired or arrested because he demanded bribes or beat someone. If the coalition is part of the process, Afghans can feel confident that their decisions will be followed. The CF should assign staff to support government and security committees and enhance their understanding of tribal dynamics by expanding the human-terrain-team system and lengthening the tours of select officials. (Members of human-terrain teams are forward-deployed social scientists who help CF members understand the history and culture of a local area to improve their decision-making.)

Beyond mentoring. In addition to these mentoring, advising, liaison and support functions, the CF will also have to disperse among the tribes to bolster their fighting capability, advise their leaders, train their men and limit tribal conflict. The CF soldiers would have to live with the tribe or village full-time, as was done in many cases in Anbar Province, in numbers large enough to prevent their being overrun by the insurgents or, quite frankly, betrayed by the tribe, while facilitating an active defense of the village. This is especially needed in villages where tribal structures are weak or a leader's capabilities are lacking. This aspect of Afghan tribal-engagement strategy will require more soldiers and a readjustment of existing forces into a population-protection posture.

But not every tribe will need an increased CF presence. Many tribes are already able to provide their members security and need only occasional meetings with the GIROA and CF to replenish ammunition, provide weapons and humanitarian assistance, and coordinate strategy. Although a population-protection approach has largely been undertaken in eastern Afghanistan, it should be broadened to include the whole Pashtun belt. As our Soldiers live with the tribes, they will also have to undertake a mentoring program for the tribal lashgars, but their efforts shouldn't be confined to security training. They should also initiate a literacy and administrative training program to better develop the abilities of the tribal members to manage their affairs. This kind of training will help tribes become better ANP members as the lashgars transition into official police forces. As our troops disperse among the tribes, it is imperative that they also receive civil affairs assistance and work closely with the local provincial-reconstruction team. As security becomes the norm, it will be necessary to follow up quickly with community projects.

Winning and maintaining the support of the population must be a central feature of a tribal-security strategy. While the government, security committees, the judiciary and mullahs will adjudicate disputes and investigate claims of abuse and consequently reduce cases of mistreatment, we should also seek to enlist the population as the eyes and ears of the tribal security effort.

One possible way of doing this would be to create an anonymous reporting system by which the people could regularly inform on tribal and government officials who abuse their authority. For example, during the 1950s, as the Philippine government battled the Huk insurgency, Philippine President Ramon Magsaysay

initiated a system of postcards people could use to report abuses of authority directly to him. He would then investigate the claims and take prompt action, thus putting all government officials on notice that they would never know who might inform on them.

That strategy could be adapted to Afghanistan by creating an anonymous reporting system. For the postcard system to work, postcards would have to be distributed throughout the area, at bazaars, mosques, government buildings, etc., and, when completed, dropped off anonymously at boxes erected at area mosques or given directly to a CF member. Because most Afghans attend a mosque regularly, their pattern of going to the mosque to pray would help keep them from being identified and subjected to reprisals.

Because the population is mostly illiterate, each postcard could have a series of symbols indicating various abuses of authority or corruption, such as a picture of a hand with money in it for bribery, and colors for each checkpoint could indicate where an abuse had taken place. Additionally, a phone number could be posted for residents to anonymously report abuses. This process must be effective and produce results, and the CF must play a central role in its operations, if we hope to maintain the support of the people.

Another element crucial to maintaining the support of the population is incorporating village mullahs into the tribal security process. Mullahs play a crucial role in Afghan village life because they are often the only literate person in the community, and they perform an important function as peacemaker and reconciler, as well as religious leader. While they shouldn't have a formal role on a government or security committee, they should be incorporated into the process as observers. Appropriate roles include: serving on committees investigating abuse or serving as mediators between warring factions.

Additionally, through their participation, they give the tribal security effort the imprimatur of religious sanction, blunting efforts by the Taliban to present the tribes as un-Islamic. Furthermore, if complaint boxes were located in each mosque, the local mullah could be given the responsibility for ensuring that no harm came to those who filed a complaint. A final benefit of having the help of the mullahs is that they can speak out in favor of the tribal effort, helping to maintain popular support by telling villagers they must help the tribes resist violence and intimidation. Their help could be facilitated by generous Civil Affairs assistance and other support.

No matter how well-organized the tribal security effort may be, it must have a unifying theme and message to effectively counter the insurgents' messages and propaganda and to inculcate the values of the tribal movement in its members. The tribal security effort should have a distinctive name that captures the aspirations of the people and, conversely, negatively portrays the Taliban. For example, the Taliban or "students" initially sought to eliminate warlordism and corruption from Afghan society by portraying themselves as students of Islam seeking to purify Afghanistan. One possible name could be "The *Sarmaalim* Movement" or "Principals Movement," which would put the tribes in the dominant position of "teaching" and "directing" the Taliban "students."

Another possibility could be a *Chegha* Council, or "Call for Action" Council, because *chegha* is rooted in the code of Pashtunwali. The themes of law and order, security and justice could be reinforced by messages such as "power to the tribes," justice

Kuchi villagers gather in Herat province, Afghanistan, to meet with a joint U.S. and Afghan team, Feb. 17, 2009. (Photo by LCDR John Gay, U.S. Navy)

"As tribes assume a more central role in U.S. security policy for Afghanistan, it is essential that we modify the lessons of Iraq to reflect the history and tactical reality of Afghanistan."

for the people" or "revenge for the innocent." Those themes could be summarized as *sialy* (equality), *ezaar* (respect of all people), *badal* (revenge) and *teega/nerkh* (law). Deciding upon a theme and a message reinforces the goals of the tribal lashgar, establishes a code of behavior for tribal members, marginalizes the Taliban and captures the aspirations and hopes of the people.

An individual code of behavior should also be crafted that can be posted in every village, broadcast over the radio, and seen at bazaars, checkpoints and government buildings. Much like the code former British officer John Bagot Glubb used when he treated the Southern Desert Camel Corps and professionalized the Arab Legion in Jordan, the code would spell out the positive behaviors that tribal members should follow and those they should avoid. For example, it could say such simple things as, "Treat the people with respect," "Be polite and courteous," "Work hard, be honest, and the people will reward you," "Don't lie, cheat or steal," "Show up on time and work honestly." These messages may sound a bit simplistic, but the goal is not only to set expectations for tribal behavior but also to limit the ability of the Taliban to feed off of popular distaste for the abuses of power that local security leaders often commit. If a tribal lashgar treats the people with respect and through its positive behavior earns the trust of the people, the people and the government will be united in defeating the Taliban.

One of the central features of the Afghan political and military landscape is the warlord. Many of these men seized power during the struggle against the Soviets, and their corrupt and violent behavior following the communist withdrawal deeply alienated the Afghan people, who, in many cases, welcomed the rise of the Taliban as a force for justice against the depredations of the warlords. Following the toppling of the Taliban in 2001, U.S. policy focused on putting warlords back in power as an inexpensive and quick way to re-establish authority in the countryside. Since that time, the population has become increasingly alienated from the GIROA because of the behavior of the warlords, many of whom are allies of President Karzai, and the people have often enlisted with the Taliban out of frustration. Though some warlords have been removed, their replacements, who have usually been technocrats, are often systematically undermined by the warlord.

If the tribes are going to rise up against the Taliban, the CF must work to check the power of the warlords, but it must do so in a way that doesn't prompt the warlords to sabotage the tribal movement. A necessary first step is to have CF troops train the warlord's men and live among them. The goal of this effort is not only to train and professionalize the warlord's militia but also to gather information on him and his men while monitoring their behavior. Over time, the CF will gain a better understanding of the sources of the warlord's power, identify leaders within his camp who could be influenced to support the new security order, and have opportunities to mitigate the warlord's predatory behavior toward the local population and to win his support for the tribal movement.

The warlord will likely oppose or undermine the tribal movement if he doesn't feel that it is in his interest to support it. If he sees the movement as a possible source of funds for his men, he will support it. If his sources of revenue are directly challenged (e.g., control of checkpoints), he will oppose it. If some of the warlord's men are known to have committed abuses, it would be better to relieve them quietly and one at a time, so that they don't have an opportunity to organize against the process. If warlord-controlled checkpoint is notorious for corruption, for example, it would be best to "Afghanize" it by putting the ANA in charge of it or by creating a joint tribal checkpoint. A strategy of warlord containment and enlistment should move carefully and deliberately to remove any obstacles that could prevent the tribal movement from working; reduce and remove tribal conflict points, such as checkpoint control and access to government resources; and seek to transform the warlord and his men into responsible citizens.

As tribes assume a more central role in U.S. security policy for Afghanistan, it is essential that we modify the lessons of Iraq to reflect the history and tactical reality of Afghanistan. We should craft a pragmatic strategy that will achieve enduring security effects for the local population by taking advantage of traditional authority structures without replicating the rampant warlordism of the past. We must enlist Afghanistan's tribes to help them forcefully confront the insurgency while maintaining the active support of the people and reducing their tendency to fight among themselves.

We will have to embrace some additional risks for our troops as they live among the people and learn the intricate details of tribal political life. But their efforts will be worth it, because the Afghan people are with us, and if we work with them, breaking bread and suffering through the same struggles to secure their communities, we will decisively defeat the Taliban. As one tribal elder recently told a Marine in Helmand Province (as reported in the Associated Press), "When you protect us, we will be able to protect you." Through this active partnership, Americans and Afghans can defeat terrorism, resist intimidation and set the conditions for peace through victory.

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Dan Green is a visiting fellow at the Terrorism Research Center in Ballston, Va. He left the policy office of the Office of the Secretary of Defense in January, where he worked as a special assistant to the Assistant Secretary of Defense for International Security Affairs. In 2005-2006, he was the U.S. Department of State Political Adviser to the Uruzgan Province Provincial Reconstruction Team. In 2007, he deployed with the Navy to Iraq's Anbar province, where he worked as a tribal-engagement officer.

HAMILTON AWARD

2009 Winner:

B/1-109th Field Artillery, 55th Heavy Brigade Combat Team, 28th Infantry Division

B/1-109th Field Artillery, 55th Heavy Brigade Combat Team, 28th Infantry Division, Nanticoke, Pa., won the Hamilton Best Army National Guard Battery Award for 2009. CPT Joseph Ruotolo commands the battery with 1SG Brian McMichael.

Named for Alexander Hamilton, a Revolutionary War artilleryman and American statesman, the Hamilton Award was established in 2002. It annually recognizes a high-performing Army National Guard battery based on specific criteria and a narrative.

B/1-109 Field Artillery excelled in 2009 in all aspects from individual and unit readiness to training excellence to mission accomplishment. Throughout fiscal year 2009, B/1-109 FA maintained an assigned strength percentage of 110 percent (127 Soldiers assigned out of 115 authorized), recruited 10 new members (six non-prior service; four prior service) despite a shutdown in recruiting, beginning March 2009 and lasting for the remainder of the fiscal year, had an extraordinary overall attrition rate of 9.4 percent (well below the National Guard Bureau goal of 18 percent) and an assigned duty military occupational skill qualification percentage of 91 percent. All in all, the battery had 88 Soldiers out of 127 assigned (the majority of the remainder attending or awaiting Initial Entry Training) mobilized in support of deployments to Iraq, Afghanistan and Egypt (as part of Multinational Force and Observers).

In November 2008, following a demanding eight-month deployment to Afghanistan as backfills to 3rd Battalion, 103rd Armor, Pa. Army National Guard in support of its mobilization as a provincial reconstruction team security force battalion, 46 Soldiers from the battery returned home to a well deserved heroes' welcome.

Soldiers of B/1-109 Field Artillery prepare to load a round into their M777A2 howitzer. (Photo courtesy of CPT Joseph Ruotolo, U.S. Army)

These Soldiers served with six separate provincial reconstruction team security platoons throughout the country, earning the admiration and respect of the leadership of 3-103 Armor.

B/1-109 FA mobilized as a 90-man M777A2 howitzer battery as part of 1-108 FA, 56th Stryker Brigade Combat Team, on September 19, 2008, with an additional 41 organic members of the battery mobilizing. The battery proceeded to Camp Shelby, Miss., to complete collective post-mobilization training, cannon live-fire exercises and preparation for 56 Stryker Brigade Combat Team's mission readiness exercise at the Joint Readiness Training Center, Fort Polk, La., in November to December 2008. While at Camp Shelby, the battery qualified in accordance with Artillery Table 15 before receiving notice that they would serve as 1-108 FA's main effort maneuver battery for the 56th Stryker Brigade Combat Team's mission readiness exercise. The battery enabled 1-108 FA and 56 Brigade Combat Team to accomplish their missions, earning the admiration of the observer/controllers and 56th Brigade Combat Team's chain of command.

Arriving in Kuwait January 22, 2009, B/1-109 FA calibrated 10 out of the battalion's 19 howitzers. After moving to Camp Taji, Iraq, B/1-109 FA, once again, was selected as the main effort for 1-108 FA and initially tasked with a number of missions, including main entry control point security, security for 710th Explosive Ordnance Detachment and battalion quick reaction force. On March 23, 2009, not much

"B/1-109 Field Artillery excelled in 2009 in all aspects from individual and unit readiness to training excellence to mission accomplishment."

more than a month after transfer of authority, B/1-109 FA was given the additional task of providing a three-gun platoon in direct support of 1st Heavy Brigade Combat Team, 1st Cavalry Division, in the vicinity of Joint Security Station Istiqlaal, Iraq. At 2040 hours local time on March 29, 2009, B/1-109 FA made history, firing its first combat artillery mission since World War II. The battery would again make history on April 15, 2009 as the first M777A2-equipped National Guard unit to destroy a target successfully with Excalibur.

With transfer of authority in August 2009, B/1-109 FA fired nearly 1,200 rounds in theater, all timely, accurately, precisely and safely, earning the admiration and respect of the Multi-National Division-Baghdad commanding general, MG Daniel P. Boger, 1st Cavalry Division. B/1-109FA had proven itself as artillerymen of the highest caliber, having accomplished every nonstandard mission received to the highest standards while simultaneously excelling on a new towed weapon system, doing all this while suffering no casualties and only minor injuries throughout.

Not to be outdone, Battery B (Rear), 1-109 FA conducted a rigorous training program throughout training year 2009 designed to maintain its tradition of excellence. During Annual Training 2009, at Fort Pickett, Va., with more than 80 percent of the battery not in attendance due to current OIF deployment or recent return from Operation Enduring Freedom deployments, the remaining 24 members of Battery B (Rear) fell in with the few remaining members of Battery A to man six Paladin howitzers and one battery operations center. This makeshift battery of 65 dedicated troops, many of whom had just completed Initial Entry Training, conducted Paladin Software Block II and Excalibur New Equipment Training in only three days rather than the usual five. They then certified as Paladin/battery operations center sections, firing 1,379 rounds in four days, all timely, accurately and safely with some of the finest effects on target the battalion has ever seen — no small feat given the harsh environment of southern Va. in the summer. Additionally, as part of both a counter-insurgency situational training exercise and a force-on-force mission readiness-type exercise, the battery conducted the same cordon and search live at Fort Pickett's Urban Assault Course in the "run" phase of counter-insurgency training that they previously conducted in simulation during the Fires simulation exercise as the "crawl/walk" phase.

These magnificent artillerymen, most of whom had very limited urban operations experience and training, successfully cleared two complex structures suspected of being insurgent strongholds, capturing two high-value insurgents in the process, all without any friendly or civilian casualties or collateral damage. The unit displayed the ability to go from the rigors of Paladin artillery operations one day to the uncertainties of counter-insurgency/stability operations the next, demonstrating the kind of agility our Army needs.

A Soldier of B/1-109 Field Artillery visits Assyriah Elementary School. (Photo courtesy of CPT Joseph Ruotolo, U.S. Army)

KNOX AWARD

2009 Winner:

B Battery, 4th Battalion, 25th Field Artillery, 3rd Infantry Brigade Combat Team, 10th Mountain Division

B Battery *Blackjacks*, 4th Battalion, 25th Field Artillery, 3rd Infantry Brigade Combat Team, 10th Mountain Division, Fort Drum, N.Y., is the winner of the 2008 Henry A. Knox Best Active Component Battery Award. B Battery is commanded by CPT Matthew Burnette and 1SG Joe Winstead.

The annual award is named for the first Chief of Field Artillery, MG Henry A. Knox, a Revolutionary War hero, and recognizes an outstanding active U.S. Army battery based on specific criteria and a narrative of performance. A similar award was established in 1924 but was phased out in 1940 as World War II loomed. The award was reestablished in 2002.

B Battery started training in preparation for Operation Iraqi Freedom. Due to the mission requirements for Operation Iraqi Freedom, B/4-25 FA conducted several training exercises which focused on maneuver tactics, techniques and procedures. In October 2008, Bravo Battery was given a new mission; deploy in support of Operation Enduring Freedom. Its mission would be to provide direct support fires to the 3rd Brigade Combat Team, "TF Spartan." Unknown to B/4-25 FA, it would receive an additional mission of conducting maneuver operations throughout the Jalrez Valley, Wardak province; one of the most dangerous areas of operation in the world. B/4-25 FA did not take its change of mission lightly; the unit certified on three different howitzer systems — M119A2, M198 and M777A2, while simultaneously conducting fires support coordination exercises in support of its brigade and performing platoon live fire exercises to stay proficient in infantry tasks. With 90 *Blackjack* Soldiers, B/4-25 FA would surpass all expectations in both field artillery and infantry tasks.

"The annual award is named for the first Chief of Field Artillery, MG Henry A. Knox, a Revolutionary War hero, and recognizes an outstanding active U.S. Army battery based on specific criteria and a narrative of performance."

Once deployed to Afghanistan, B/4-25 FA manned two M777A2 and two M119A2 howitzers at Forward Operating Base Airborne and Command Outpost Sayed Abad, both with one gun section each, while also manning two M777A2 howitzers at Command Outpost Carwile. B/4-25 FA also conducted numerous artillery raids into Chak District in support of combat operations to oust enemy strongholds. B Battery fired more than 2,000 105-mm and 155-mm rounds throughout Wardak province. Combined, B/4-25 FA's artillery platoon effectively covered more than 640 square kilometers of Wardak province with artillery fires, with the combat proven ability to raid into any district by ground or air. Even though B/4-25 FA was stretched from end to end of Wardak province, it effectively accumulated thousands of 105-mm and 155-mm rounds fired and more than 20 enemy killed in action, with every platoon in the battery achieving enemy killed in action due to artillery fires, all with absolutely zero incidents.

While still providing artillery support to all of Wardak province, B/4-25 FA excelled in the maneuver mission as well. On July 08, 2009, B/4-25 FA was made the Ground Command Unit in the Jalrez District — a crucial valley with direct access to Kabul where many Taliban leaders reside and conduct operations against coalition and Afghan government officials. B/4-25 FA conducted key leader engagements, commander's emergency response program Projects, humanitarian aid and countless kinetic operations to maintain U.S. and Afghan interests. With only two Maneuver Platoons, B/4-25 FA conducted more than 200 combat patrols. B Battery captured several detainees, one of which was a high ranking improvised explosive device cell leader responsible for many of the improvised explosive devices in the Jalrez Valley.

During B/4-25 FA's tour in the Jalrez Valley, it has been in several direct and indirect fires as well as improvised explosive device engagements with the enemy. While staying true to its mission, B/4-25 FA consistently engaged the enemy and ultimately pushed it out of the valley. In doing so, every Soldier in B Battery has earned his combat action badge, and three individuals have earned purple hearts.

GRUBER AWARD

2009 Winner:

Sergeant First Class Brandon J. Aguilar

The Gruber Award was established in 2002 to recognize outstanding individual thought and innovation that results in significant contributions to or the enhancement of the field artillery's warfighting capabilities, morale, readiness or maintenance. It is named after Brigadier General Edmund L. Gruber, who as a first lieutenant in 1908, composed the *Caisson Song* that the Army adapted as *The Army Goes Rolling Along* in 1952.

SFC Brandon J. Aguilar of B Battery, 1st Battalion, 319th Airborne Field Artillery Regiment, distinguished himself through exceptionally meritorious achievement while assigned to B Battery, 1st Battalion, 319th Airborne Field Artillery Regiment, during Operation Iraqi Freedom 08-09. Aguilar's performance as 1st platoon sergeant greatly contributed to the overall success of not only B Battery's mission, but also the nonstandard maneuver mission of 1-319th Airborne Field Artillery Regiment. Under his leadership and direction, his platoon completed more than 600 combat missions, including time sensitive target missions, reconnaissance and surveillance patrols, mounted and dismounted patrols, checkpoint reinforcement and overwatch, quick reaction force missions, small kill-team operations and numerous humanitarian assistance deliveries, all while sustaining zero losses to personnel or equipment

Operating a maneuver platoon with 21 personnel, Aguilar also supported more than 20 battalion operations, and 30 battery-sized operations focused on providing and maintaining security for the local populace of Zafaraniyah. His dedication to duty and mission focus played a pivotal role in the battalion's efforts to secure the Karadah sub-district of Zafaraniyah, eliminating Jaysh Al Mahdi/Special Groups and al Qaeda in Iraq elements from the Operating Environment, and promoting peace and stability with the local leaders and populace.

In mid-August, the battalion commander and command sergeant major selected Aguilar's platoon to take on an artillery training mission with MI09A6 155-mm Paladins to establish a "hot gun" capability for Multi-National Division-Baghdad capable of employing Excalibur. Aguilar moved the platoon — a M119A2 105-mm howitzer platoon by modified tables of organization and equipment — from Joint Security Station Zafaraniyah to Forward Operating Base Hammer and trained on M109A6 Paladins to accomplish the counterfire and direct support role for the brigade combat team, should the need arise to replace the platoon from 1-82 FA.

While this would be a daunting task to any artillery unit after operating for a year in a nonstandard maneuver role in full-spectrum operations, Aguilar's element attacked the mission with the same consistent tenacity as all other tasks it had accomplished throughout the deployment, and 1st Platoon excelled in its new role. The platoon's training allowed it to participate in eight live-fire exercises from August 12, 2009 to September 17, 2009. Despite working on an unfamiliar system, the platoon participated in the firing of more than 213 rounds with zero incidents or safety violations, while constantly achieving standard mission times.

The battalion command sergeant major called upon Aguilar to coach, teach and mentor howitzer sections and key leaders in field artillery operations to support the battalion's mission upon redeployment. He demonstrated superior knowledge in artillery tasks and gunnery, successfully developing four inexperienced gunners, four howitzer section chiefs and four lieutenants after conducting twelve months of nonstandard operations in Iraq. He worked tirelessly, constructing and supervising training that shaped the battery in basic artillery skills and consistently received praise from the battalion's leadership. He was chosen due to his leadership abilities and commitment to excellence in his craft, which he demonstrated on numerous occasions.

Throughout his tour and without exception, Aguilar consistently focused his efforts on improving the unit by implementing thorough training, rehearsals and after-action reviews following execution. His stalwart leadership and focus on standards had a lasting impact on the battery's ability to accomplish any mission or task, showing versatility in both maneuver and field artillery operations. Aguilar established himself as a true combat multiplier, earning the respect and confidence of his superiors, subordinates and peers throughout the airborne artillery community.

Aguilar demonstrated superb attention to detail and accountability while preparing all sensitive equipment, fifteen section and platoon equipment containers, and four M119 howitzers for deployment in October and November of 2008. Aguilar supervised three unit movement officers, five custom inspectors and two gunnery sergeants during the preparation of all equipment for deployment, ensuring zero deficiencies in the battery's equipment. His efforts enabled the battery to assume full-spectrum operations rapidly upon arrival in theater.

With coalition forces moving out of the cities and rapidly undergoing many base closures and realignments during Operation Iraqi Freedom 08-09, he again moved the battery's equipment, this time from Forward Operating Base Rustamiyah to Joint Security Station Zafaraniyah, all while maintaining a fierce battle rhythm in the operational environment. This NCO's attention to detail and fierce enforcement of standards and property accountability resulted in the battery's ability to maintain 100 percent accountability of equipment despite multiple moves throughout the deployment. His knowledge and experience allowed them to do so in a manner that facilitated quick inventory of the equipment after each move and rapid fielding for combat operations.

Aguilar coached and mentored his platoon's fire direction chief, SSG Ronnie Mason, for the prestigious Sergeant Audie Murphy Club board. Mason received the second highest score in the brigade combat team and was inducted into the prestigious club on September 12, 2009.

The success of B Battery and 1st Battalion, 319th Airborne Field Artillery Regiment, could not have been achieved without the diligent efforts of Aguilar. His actions are in keeping with the highest traditions of this prestigious award and reflect great credit on him, the 1st Battalion, 319th Airborne Field Artillery Regiment; the 3rd Brigade Combat Team; the 82nd Airborne Division; and the U.S. Army.

LEFT: A paratrooper assigned to 2nd Battalion, 319th Airborne Field Artillery Regiment, 2nd Brigade Combat Team, 82nd Airborne Division, hands water from the back of a Light Medium Tactical Vehicle to a young girl living in Port-au-Prince, Haiti, Jan. 22, following the Jan. 12 earthquake that ravaged the Caribbean nation. (Photo by PFC Kissta M. Feldner, U.S. Army)

ABOVE: SGT Jeremiah Elliott, a fire control sergeant assigned to A Battery, 2nd Battalion, 319th Airborne Field Artillery Regiment, 2nd Brigade Combat Team, 82nd Airborne Division, stops while on patrol through Port-au-Prince, Haiti to get coordinants for a community in need of help on Jan. 23. (Photo by PFC Kissta M. Feldner, U.S. Army)

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Soldiers assigned to B Battery, 2nd Battalion, 32nd Field Artillery Regiment, 4th Brigade Combat Team, 1st Infantry Division, use an Iraqi police check point to provide perimeter road blocks and a look-out during Operation Patriot Raptor; an operation led by Iraqi police forces to capture members of terrorist cells within the city of Al Ad Dawr, Iraq, Jan. 13. (Photo by SPC Canaan Radcliffe, U.S. Army)

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